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Vol. XLI.—No. 3. Issued January, 1921.

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OF

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NOTICES.

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SUBSCRIPTIONS.

The attention of Members and Associates is called to the fact that all annual Subscriptions become payable on January 1st. It will facilitate the administration of the Institute if Members and Associates will send their subscriptions in the early part of the year.

SESSIONAL MEETINGS.

Exeter.—Friday, January 28th, at 7 p.m., in conjunction with the Western Branch of the Society of Medical Officers of Health. Discussion on "The Sanatorium Question," to be opened by E. Ward, M.D., F.R.C.S., Tuberculosis Officer, Devon County Council.

On Saturday, January 29th, there will be a short discussion on "Housing," to be opened by P. H. Stirk, M.R.C.S., D.P.H., Medical Officer of Health, Exeter, to be followed by a visit to new Houses and Insanitary Areas.

Manchester.—Friday, February 25th, at 7 p.m., in the College of Technology. Discussion on "The Use of Open Fires for Domestic Heating," to be opened by Miss Margaret Fishenden, D.Sc.; "The Present Position of Smokeless Fuels," by Captain F. S. Sinnatt, M.[illegible] M.Sc., F.I.C.; and on "Air Pollution," by Prof. J. Radcliffe, M.Sc.(Tech.).

On Saturday, February 26th, visits will be made to places of interest.

ORDINARY GENERAL MEETING.

The Ordinary General Meeting will be held at the Institute on Wednesday, April 27th, at 4.30 p.m.

CONGRESS AT FOLKESTONE.

The Right Hon. The Earl of Radnor has consented to act as President of the Congress to be held at Folkestone from June 20th to 25th, 1921.

It is proposed to hold a Public Meeting to inaugurate the general arrangements for the Congress and Exhibition at Folkestone on January 19th.

[P.T.O.

LECTURES.

An Introductory Lecture to students attending the several courses will be given by Prof. H. R. Kenwood, C.M.G., M.B., D.P.H., F.R.S.E., on January 31st, at 5.30 p.m.

The next Courses of Lectures for Sanitary Officers will commence on February 7th ; for Health Visitors and Child Welfare Workers on February 11th ; for Meat and Food Inspectors on February 18th ; and for Army Officers and Professional Men on April 11th.

Members and Associates of the Institute of two or more years' standing, and who have paid their subscription, can, upon application beforehand, be supplied with tickets of admission at reduced rates, viz. :—

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EXAMINATIONS.

In Sanitary Science as applied to Buildings and Public Works, for Inspectors of Nuisances, Maternity and Child Welfare Workers, Women Health Visitors and School Nurses, and School Hygiene, including Elementary Physiology, will be held at :—

Hereford, January 21st and 22nd. Bristol, March 4th and 5th.
Plymouth, January 28th and 29th. Portsmouth, March 11th and 12th.
Preston, February 4th and 5th. Edinburgh, March 18th and 19th.

For Inspectors of Meat and other Foods ;—
Manchester, February 18th and 19th.

NOTES.

Cloth Covers are prepared for Binding the JOURNAL and the Supplement, price 2s. 0d.

Forms for the proposal of New Members and Associates can be obtained at the Office ; any change of address should be at once notified.

(A detailed list of Lectures and Meetings is given in the Calendar in the Supplement, and syllabus can be obtained at the office.)

E. WHITE WALLIS,
Secretary.

January, 1921.

VOL XLI.—No. 3. Issued January, 1921.

JOURNAL OF THE ROYAL SANITARY INSTITUTE.

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Telegraph: "SANITUTE, CHURTON, LONDON."

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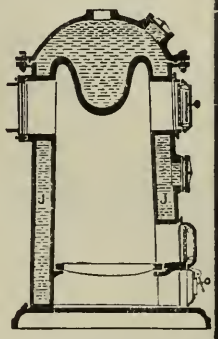

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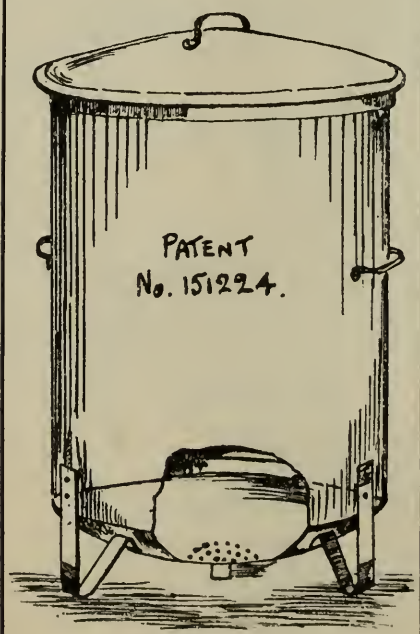

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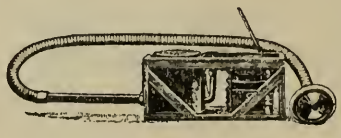

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Volume XLI. No. 3. Issued January, 1921.

JOURNAL

OF

THE ROYAL SANITARY INSTITUTE

CONGRESS AT BIRMINGHAM.

SECTION C.—HYGIENE OF MATERNITY AND CHILD WELFARE.

Presidential Address by Lt.-Colonel F. E. FREMANTLE, O.B.E., M.P., M.A., M.B., F.R.C.P. (Fellow.)

AT the end of the devastating war in which our country alone has lost some 700,000 of its best male lives, while many of those that remain are maimed and in varying degrees disabled from full efficiency for the work of life, it is of vital importance that we should consider the recruiting of the population, with regard both to numbers and quality; that we should consider how both to assure the constant flow of manhood and womanhood in sufficient numbers to carry on and extend the work and ideals of our generation throughout the British Empire, and also to make the most of every recruit thus born to the nation.

The opportunity of this Congress at the present time is therefore exceptional; its authority is unique, and the work of this Section is of first importance.

For the discussions, the special subjects selected aptly concern the difficult problems of still-birth and of venereal disease. But in opening this Session it may be as well to take in wider view the whole problem of recruitment of the nation, and to touch upon certain outstanding features.

Questions concerning the welfare of mothers and children are essentially women's work, and we shall welcome the contributions of women to the discussions. The extension of the Parliamentary Franchise to women has opened a great vista of change in the theory and practice of all affairs which specially appertain to motherhood. These have hitherto been left too much to the so-called "stronger sex" to decide, guide and direct. We of that

sex must be prepared to take advice on these subjects, as well as to give it ; to learn from the experience and instincts of motherhood, in which we can never directly share, as at least of equal value with our own experience and theories, and not least, to encourage, officially, but still more in the home, a delegation to women of the right sort of the duties of guarding the health of motherhood and infancy.

As we review the national gains and losses from the war, we are glad to recognise a decline in mortality, both of infants and of mothers in childbirth, in the latter case from 3,469 (3·94 per thousand births) in 1914, to 2,353 (3·55 per thousand births) in 1918 from all diseases of pregnancy and childbirth, and in the case of infant mortality from 105 per thousand births in 1914 to 97 and 89 in the last two years. The figure of 97 in 1918 includes 10 from diarrhoeal diseases, which is a variable quantity, according to seasons. All other causes account for 87 out of the 97 deaths. The Registrar-General, on page xxxiii. of his latest Annual Report, that for 1918, gives the corresponding figures for every year since 1883, shewing the mortality from other than diarrhoeal diseases to have been highest at 136 per thousand births in 1891, to have come down to 100 for the first time in 1908, to below 90 in 1912, to 88 in 1914, the following four years shewing the figures of 95, 80, 86 and 87.

The work before us in future years is to eliminate the ten deaths per thousand births from diarrhoeal disease, and to cut down the 87 to the 40 or so that may be considered inevitable. In this task we have made considerable progress by sub-dividing the figures and the problems into three periods, now named ante-natal, intra-natal, and post-natal, taking the ante-natal period back to the date of conception, the intra-natal from the beginning of labour to the end of the first month after birth, and the post-natal to the end of the first year. The problems of intra-natal mortality are again sub-divided into those before and after separation from the mother, the latter period, or the first month after birth, being known as the " neo-natal " period.

The chief agencies for dealing with these respective periods must obviously be associated, the ante-natal with the ante-natal clinic and the home, the intra-natal with the midwife and doctor, as well as the home, the post-natal with the health visitor, the maternity centre and the home. But in each case the pivot must be the home and the mother. It is on these that we must focus our attention.

Leaving aside for the moment the ante-natal clinic, the maternity centre, and the doctor, let us consider the practical problems of the supply of midwives. Midwives attend nearly three-fourths of the confinements in the country, and as many as 95 per cent. in some industrial communities. In

the rural districts it is on the attention of a midwife, or an untrained neighbour, that a woman most commonly depends, unless a medical man happens to be available at the time. But the result of the midwives Acts, while improving immeasurably the course of training and the actual practice of midwives, has been to abolish the uncertificated midwife, while making it more difficult and costly for women to enter the midwives' profession.

The economic changes resulting from the war have furthermore not only added to, if not actually doubled, the cost of living; but have largely reduced the voluntary subscriptions on which many Nursing Associations depend to supplement the maternity fees. Instead of eighty or a hundred pounds a year, one hundred and fifty pounds is now the sum laid down by the Queen Victoria Jubilee Institute for Nurses as the minimum salary for a district nurse-midwife. But even this, without pension or promotion, is insufficient attraction to the young woman of to-day to be trained. She has been used to high wages for various services during the war, with a greatly increased standard of comfort and pleasure; the value of money is halved, and the supply of midwives in training has fallen off to an alarming extent. It is hoped that Local Authorities may use the powers given to them to increase the prospects of the midwives' profession. But still more should it be urged that the working classes, except in special circumstances of difficulty, should pay a sufficient fee to be able to cover these services; even if it means increased wages and increased contributions to insurance funds. This is the same problem that meets us in Housing, and countless other questions. The working classes in their own interest should be self supporting, and should look to the Authority for help only in circumstances of special need.

With regard to the preventible mortality of infant life, we welcome action that is being taken in connection with the milk supplies, with the problems of tuberculosis, and with those of venereal disease. The Milk and Dairies Bill now before Parliament is likely to pass into law this summer, and with it the provisions of the 1915 Act, which has hitherto been suspended. and the Orders of the Board of Agriculture to deal with tubercle in cattle.

Tuberculosis of infancy will be combated by the measures promised by the Minister of Health when he excluded tuberculosis from the new National Health Insurance Bill. We shall all watch anxiously for the Government's proposals, and must be prepared to examine them most carefully, and give useful criticism.

On the subject of venereal disease perhaps more light has been thrown during the last few years than on all the other causes of infant mortality, for until the Royal Commission on Venereal Diseases made its Report these scourges were a sealed book to public health reformers, and the country

was blind to their appalling dangers. It is reckoned that in urban districts one quarter of the ante-natal and intra-natal deaths are due to syphilis alone, and this disease accounts in England and Wales alone for 27,000 deaths during pregnancy and infancy every year. It is obvious that, apart from treatment, these diseases must be prevented. There are two contending views with regard to the advocacy of personal disinfection on the occasion of promiscuous intercourse. There can be no doubt that the opening of the eyes of the public should, and must, lead before long to a general use of disinfection under the circumstances in which venereal disease is commonly contracted. There is no doubt that it is the duty of us all, in our parental, professional or official capacities, to advocate, at least personally, the application of common-sense and modern science in this way to the prevention of these diseases. But a far stronger line requires to be taken with regard to the ideal of chastity and of sound healthy marriage as the foundation stone of sound national life. It is seldom urged on children as they grow up that the whole future of the nation and of all the ideals which are drummed into their heads must depend upon the institution of marriage. It is the very essence of national welfare; indeed of national existence. Promiscuous intercourse is opposed to this institution, childless marriages frustrate it; bachelor and spinster habits rival it with growing success; and the increased opportunities for the employment of women are having a most dangerous influence in the same direction.

A word must therefore be said in regard to what is called the Women's Movement. We must welcome the growing admission of women's instinct and experience to the councils of the nation. We must welcome the wider opportunity given for independent existence and welfare to women who are doomed to independence. But this movement has been directed largely by those who by strain of circumstances have to look to their own efforts for a separate life. It has not been directed by the mothers of the nation. Moreover, the whole outlook of the nation tends to be governed more and more by bachelors and spinsters, men and women, especially women, who have not the family outlook, and who, themselves struggling, most creditably, to enlarge their ideas, opportunities and aspirations, are insensibly steering the nation away from home life. The result is that girls grow up to seek independent careers, to live independent lives, with results known to all in touch with their life, and so to establish habits and earn incomes which make marriage unattractive, unless the habits and sources of income continue. The result is increasing sterility and race suicide. The birth-rate declined in the last forty years from 36 to 18 per thousand. Equal rights between the sexes is an indefinite phrase, to which we can most of us subscribe. But equal rights are not similar rights, and the movement

for "Sex Equality" is becoming a movement for the abolition of sex. The extreme character of this movement for equality is evidenced by a Bill now before Parliament to prevent the employment of men on night-work because women are debarred from night-work! Equality of the sexes in every respect is no more desirable or possible in habit and responsibility than in anatomy and function.

I would draw the attention of all in this Congress to the Second Report of the Birth-Rate Commission, published by Chapman & Hall, at 25/-, under the title "Problems of Population and Parenthood." It is an invaluable collection of evidence and opinion, on subjects of vital importance to maternity and childhood. On our children depend the physical, mental and spiritual future of the race; and the nation calls for healthier children, and many more of them. We, and still more the mothers of our land, must give public opinion a strong lead in this direction. And to my mind the fault lies in modern education and (as a paradox after the Great War) in the lack of discipline, of self-sacrifice and of effective religion.

The great hope in facing these vast problems lies in increased light and in public opinion, focussed on the nurseries of the nation. The last few years have thrown a flood of light on these problems. Let the facts be known and freely and openly discussed. Then, just as in the war the public decreed that the nation must be saved and all must contribute their utmost to that end, so in reconstruction of the national life public opinion must decree that the race is to be saved from these dangers that beset it. It is to the Mothers that we must mainly appeal; and to the men who recognise and honour the national work of motherhood. Members of this Congress, in their intimate association with the lives of the people, can play a very large part in establishing a healthy public opinion to this end.

"The Still-Birth Problem from the Public Health Point of View."

By J. Johnstone Jervis, M.D., D.P.H., M.O.H.,. Leeds (Member).

STILL-BIRTHS have figured in the vital statistics of this and nearly every other civilised country for centuries, but it is only within comparatively recent years that there has been a definite still-birth problem. In bygone days a still-birth was looked upon both by the medical profession and the laity as a natural phenomenon ; it was one of the possible disasters which every pregnant woman had to face and for which there was no explanation and no help. The fact recorded in an old medical treatise in my possession that, of the total number of children entered in the public register of burials in Edinburgh between June, 1735, and May, 1736, 10 per cent. were still-born, does not seem to have awakened the slightest interest in the minds of the big men of medicine of those days ; at any rate, no comment is made on it. This is not to be wondered at, as at that period of medical history little or nothing was known about the intra-uterine life of the child, and, notwithstanding the fact that midwifery had been practised for centuries and was easily the most advanced department of medical science. Then, again, in those days superstition had a tremendous hold on all classes of the community, even the highly educated, and many were the quaint beliefs—some of them still alive—which clung round the expectant mother and her unborn babe. With the growth of knowledge many of these old superstitions have disappeared, but not all. Some still survive to torment the mother and baffle the physician. In the onward march of progress through the years medical science has achieved great things for the mother and her infant, especially so during this and the latter part of the nineteenth century. The maternal death-rate, the incidence of disease in the parturient woman, the infantile mortality rate, all show a wonderful reduction, but in the matter of the ante-natal and neo-natal death-rates the record is not so good. This failure is, in my opinion, due to four great causes : firstly, indifference on the part of the mother herself ; secondly, failure of the medical profession to realise the true significance of ante-natal morbidity ; thirdly, the difficulties which surround the whole subject of pregnancy and childbirth ; and fourthly, the lack of united effort, or what has been termed team work, in tackling the many problems involved.

To reflect that in the last fifty years the wastage of infant life due to ante-natal death has probably reached a figure not far short of 6,000,000, cannot but fill one with a sense of shame and dismay. And yet, notwithstanding the immensity of that total, the rate of progress is still lamentably slow.

Despite the splendid and disinterested efforts of men like Ballantyne, Routh, and others, backed up by numerous resolutions from Medical Societies, National Conferences, and Local Authorities, the Registration of Births and Deaths Act remains unamended, and dead births are still non-registrable in Great Britain. It is nearly twenty years ago since a committee of the House of Commons set up to consider the whole question of the registration of deaths, recommended in the report to Parliament that the Registration of Births and Deaths Act should be amended to include the compulsory registration of all still-born children who had completed seven months of intra-uterine life. Similarly, a special committee of the Royal Statistical Society in an exhaustive report on the subject issued in 1912, strongly urged (a) that an international definition of " still-birth " should be adopted, and (b) that still-births should be made compulsorily registrable. Even the old Local Government Board with commendable persistence drew attention year after year in the reports of its principal Medical Officers to the desirability of this reform, but all to no purpose. The lack of this little piece of legislation is a serious drawback, as without it reliable statistics cannot be obtained, and consequently appropriate preventive measures cannot be formulated. It is also highly desirable that a definition of the term " still-birth " which would be acceptable to all the civilised countries in the world should be agreed upon and universally adopted. As it is, there is so much confusion as to what exactly is meant by a still-born child, that it is perfectly futile to try to draw any comparison between the figures supplied by one country and those of another. Even the generally accepted definition of the term, that used in the Notification of Births Act, is objectionable, as it is open to more than one interpretation, a fact clearly proved by Dudfield in his report to the Royal Statistical Society. (1) A clear cut definition expressed in as simple terms as possible is what is required, and one which can be readily understood and applied by the midwife, as well as the doctor.

Mention of the Notification of Births Act brings me to the heart of my subject, because it is to this Act that we owe any knowledge we possess concerning still-births. The passing into law of this important measure marked the first real attempt to deal with the problem of ante-natal disease and death. True, it was a halting, half-hearted measure, but it did allow some light in on the subject, and helped in some degree to clear away certain of the difficulties which had beset workers prior to the passing of the Act. I shall now attempt to deal with the problem exactly as it appears to-day in the light of the knowledge gained from the operation of this Act. I am bound, however, to say here that it is quite impossible to treat the still-birth problem as a separate problem. It must be considered along with the greater and wider problem of ante-natal mortality, of which it forms part. Shortly,

still-births amongst married women represent from 3 to 4 per cent. of the total births—the number varies in different localities according to the degree of completeness of notification—whilst amongst unmarried women the rate is very much higher, probably 6 to 9 per cent. The following comparative table, showing the ante-natal and infantile death rates per 1,000 births of children of married and unmarried women, including natal deaths based on the figures for England and Wales in 1917, is taken from the second report of the National Birth-rate Commission published recently.

(2) Ante-Natal and Infantile Death-rates per 1,000 Births of Children of Married and Unmarried Women, including "Natal" Deaths, Based on the Figures for England and Wales, in 1917.

Ante-natal.	Married.	Unmarried.
In latter twelve weeks	30 ...	60
In former twenty-eight weeks (estimated) ...	120 ...	240
	150	300
Infantile.		
Neo-natal (first month)	37 ...	72
Remainder of first year	59 ...	135
	96	207
Estimated deaths of children per 1,000 births between conception and end of first year of life	246 ...	507

The significance of these figures—if accepted as a fair estimate—when translated into actual numbers is that during the year 1917, 84,661 children were lost between conception and the 28th week of pregnancy, 21,165 between the 28th week and full term, and 25,044 in the neo-natal period, or a total loss of 130,870 to the end of the first month of life. If to this total be added the number of children alive at the end of the first month, but who failed to attain their first birthday, we get a grand total of infant deaths between the date of conception and the end of the first year of life of 170,309, which is equal to a total rate of mortality of 246 per 1,000 births. These totals, I should say, understate rather than overstate the position, because, taking the City of Leeds as being fairly representative of the large towns of England, the still-births rate, including married and unmarried,

for the year 1917, was 41 per 1,000 births registered, the total number of still-births being 328. The deaths in the neo-natal period numbered 318, equal to a death rate of 42 per 1,000 births. Assuming that the rate of mortality for the ante-natal period up to the twenty-eighth week was the same as that estimated by the National Birth-rate Commission, namely, 120 per 1,000 births, we get a total of 908 deaths for this period, and this, together with the total deaths of infants between 1 and 12 months (705), gives a grand total for Leeds alone of 2,259, which works out at a death-rate of 286 for the whole period from conception to the end of the first year of life, which is an excess of 40 over the rate estimated by the National Birth-rate Commission. It will be noted that, in calculating the various totals for Leeds, the same rate has been used for married and unmarried. The figures are therefore not quite comparable, but inasmuch as the rates used by the National Birth-rate Commission for calculating the unmarried deaths are very much higher than those used in the Leeds calculations for both married and unmarried, it may be assumed that the totals give a fairly accurate idea of the wastage of infant life in cities of the size and type of Leeds.

Ballantyne has recently published figures relating to the still-births rate for Edinburgh for the years 1918 and 1919, which are very similar to those for Leeds and other large towns; namely, 44 per 1,000 births registered in 1918, and 45 per 1,000 in 1919; so that taking the country as a whole, the figures seem to be fairly constant from year to year.

Having discussed the general statistics (such as they are) relating to the subject, it might be worth while to examine the figures for a particular area more closely and in greater detail. For the purpose of this analysis, I have selected the figures for my own area, the City of Leeds, for the years 1917, 1918, and 1919. The still-births notified in these three years were 328, 287, and 340 respectively, making a total of 955, or 4·2 per cent. of the total notified births. Of these, 388, or 41 per cent., were notified by midwives, and the remaining 567, or 59 per cent., by medical practitioners. The majority of the midwives' cases (311) were investigated individually; those notified by medical practitioners were not, so that what follows refers entirely to the former. Of the 311 cases investigated, 183, or 58·8 per cent., were males, 119, or 38·3 per cent., females, and 9, or 2·9 per cent., were doubtful. The predominance of males over females is a striking feature of the figures for each year, the average excess for the whole period being 21·2 per cent. This is partly explained by the relatively larger number of males to females born, which works out at an average of 3.5 per cent. in favour of the males. The death-rate of males during the neo-natal and post-natal periods is also correspondingly high as compared with females, the difference over the three years being 20 per cent. and 13 per cent. respec-

tively for the two periods. Expressed as a rate per 1,000 births, the still-births rate for males for the three year period works out at 15·9, and for females, 11·2 ; the neo-natal mortality rate for males 51.8, and for females 37·0, whilst the infant mortality rate between the first and twelfth month is for males 91·8 and for females 76·3. The total infant mortality rate between the twenty-eighth week of pregnancy and the end of the first year of life is for males 157.3 per 1,000 births, and for females 123·2. The loss of male children is therefore in excess of that of female children at all periods up to twelve months. This denotes a state of affairs which is all the more to be deplored when one reflects on the serious depletion of the male reserves of the nation in consequence of the war. Next we turn to the period of gestation. The number born at full term was 182, or 58·5 per cent ; at eight months 56, or 18 per cent ; at seven months, 52, or 16·7 per cent ; and under seven months, 11, or 3·6 per cent ; whilst 10, or 3·2 per cent. were doubtful. The condition of the fœtus at birth was in 126 cases, or 40·5 per cent., non-macerated ; in 149, or 47·9 percent macerated. ; and in 36, or 11·6 per cent., doubtful. It has been stated that upwards of 70 per cent. of macerated still-births are syphilitic, but I am unable to make any statement on this point in the case of the Leeds figures, as only very few of the fœtuses were examined post-mortem. I am inclined to think, however, that the estimate is excessive.

The presentation was in 165, or 53 per cent., of the cases vertex ; in 33, or 10·6 breech ; in 97, or 31·2 per cent., doubtful ; whilst the remainder were about equally divided between placenta prævia, footling, and transverse. What strikes one about these figures is the large proportion of normal presentations, and the comparatively few abnormal of the dangerous type, and this preponderance of normal over abnormal seems to obtain generally all over the country, indeed in many areas is very much higher. Thus in Bradford the average for a period of three years was 76 per cent., whilst in the case of one large town it was as high as 95 per cent. I must confess to a certain amount of incredulity with regard to a figure as high as that.

That completes the analysis as far as the fœtus is concerned, and I turn now to the mother. The age of the mother is important. Of the 311 mothers, 53, or 17·1 per cent., were under 25 years; 138, or 44·4., were between 25 and 35 years ; 95, or 30·5 per cent., between 35 and 45 years ; 2, or 0·6. per cent., between 45 and 48 years ; whilst 23, or 7·4 per cent., were doubtful That is to say, rather more than one-half (51·5 per cent.) of the mothers were over 30 years of age. The majority (95 per cent.) were married and 5 per cent. were unmarried. These figures are in marked disagreement with those suggested by Routh and adopted as a standard by the National Birth-rate Commission, who put the figure of illegitimate still-births at double

that of the legitimate. The employment of the mother is another very important consideration. In the series we are now discussing, 128, or 41·1 were at work outside their homes, either part time or full time; 174, or 56 per cent. were not employed other than in their own homes; and 9, or 2.9 per cent. were doubtful. These figures seem to prove that the mother who goes out to work stands quite as good a chance of carrying to full term and giving birth to a living child as the mother who does not. The truth of this statement was tested during the war by Dr. Rhoda Adamson and others, who kept munition workers employed up to within a month of term without any untoward results happening either to mother or child.

Another important consideration, perhaps the most important of all, is that of "fertility," by which I mean the number of the children born to parents and the rate at which the births take place over a given period of time. Dr. Stevenson, Superintendent of Statistics in the Registrar-General's Office, in a well thought out paper which he read recently before the Royal Statistical Society, (3) discussing fertility of various classes, made the remark that, "It seems probable both that in many cases children die because many are born, and that many are born because comparatively few survive." Unfortunately, in the series of still-births which we are concerned, it has not been possible to get all the data necessary to apply Dr. Stevenson's reasoning. As far as the size of families is concerned, the information is complete, but it is lacking in regard to the duration of marriage and the frequency of the births. In 62 cases, or 19.9 per cent., the pregnancies were first pregnancies; in 77, or 24·8 per cent., there had been one or two previous children; in 56, or 18 per cent., 3 to 4 previous children; in 39, or 12·6 per cent., four to six previous children; in 20, or 6·4 per cent., six to nine previous children; in 29, or 9·3 per cent., nine to fifteen previous children; in 23, or 7·4 per cent., no previous children; but there had been one or more still-births or abortions; in 5 cases the history was doubtful. To summarise, whilst the percentage of still-births in families of 1 to 2 children was 24·8, in families of 2 to 15 children it was 46·3, almost double. These figures seem to bear out Dr. Stevenson's hypothesis, though it must be confessed that it is a little difficult to explain the comparatively high percentages of first pregnancies which result in still-born children, and these have been progressively increasing for the last three years. Eighty of the 311 mothers had had previous still-births, varying in number from one to as many as seven, whilst 229 mothers had had no previous still-births. I might cite as typical examples of the effects of large families on the still-births and on infant mortality rates two cases: (1) Mrs. A., who in 19 years had a total of 15 pregnancies, 5 of which ended in abortion, 7 in still-born children, 3 in living children, of whom 1 died

before it attained its fifth birth-day; (2) Mrs. B., who in 23 years had 18 pregnancies, 4 of which resulted in still-births, and 14 in living children, 7 of whom died at varying ages from a few months to two years. In both cases the pregnancies followed hard upon one another, there being as many as three in two years. Where the duration of marriage is such as to allow of a fair lapse of time between each pregnancy, *ceteris rebus paribus* the chances of a living child being born are very much increased. Take for example, a family of seven children which had resulted from seven single birth pregnancies. If the total time taken to complete the family is the minimum possible, say six years, the probability is that one or more of the children would be still-born, and the chances of the others surviving the first year of life would be very slender. But, if for every child six months be added to the total, the chances of ante-natal death recede, whilst those of post-natal life proportionately advance. If, instead of six months a year or even two years be added for each child, making the total time 13 to 20 years, the chances are very much better still; in short, the larger the family the greater should be the period between succeeding pregnancies.

Before I conclude the consideration of the series, I should like to say a word or two as to the "causes." In doing so, I want again to remind you that we are dealing with cases notified by midwives, and with the exception of a few cases where a medical man was called in to assist the midwife and in which he informed either the relatives or the midwife of the cause, the diagnosis given is either that of the mother or the midwife. Even the information from these sources is not complete, as only in 150 cases out of the series could any statement be obtained as to cause. The following are some of the principal causes alleged, given in order of frequency: (Maternal) falls, influenza, ante-partum hemorrhage, syphilis, eclampsia, alcoholism, T.N.T. poisoning, etc.: (Fœtal) mal-development, including hydrocephalus, prolapse of cord, asphyxia livida, malpresentation, cawl over face, and B.B.A. There is little to be said in regard to these, except that they seem to account fairly generally with the published returns of cases of still-births by other local authorities and by the large lying-in hospitals. In 1918 and 1919, influenza was responsible for roughly 10 per cent. of the still births notified by the midwives in Leeds. Strange to say, in the reports of all the great lying-in hospitals for these years, influenza appears on the list of causes of still-births in one only, and in that particular hospital only one case is recorded. And yet this disease was known to be particularly deadly to expectant mothers. The rôle played by venereal diseases in the causation of ante-natal death still awaits elucidation. No two authorities seem quite to agree as to the extent to which syphilis is responsible for still-births. One authority puts the figure at 9 per cent., another at 20 per cent., another

at 30 per cent., and some put it even as high as 50 per cent. There does not appear to be any reliable evidence in favour of the higher estimates, and I should say that 9 per cent. is much nearer the truth. This is the figure which is given in the Report on the Physical Welfare of Mothers and Children, issued by the Carnegie United Kingdom Trust, (4) as is shown in the following table.

	Per cent.
Prolonged, difficult, or complicated labour	45
Toxæmia of pregnancy	14
Syphilis	9
Prematurity	4
Malformation	2
Unknown	26

It is also the figure mentioned by certain of the more important lying-in hospitals, though quite a number of these put the figure much lower, some as low as 2 per cent. and 3 per cent.

The results of laboratory investigations carried out by various experts rather incline towards a figure somewhere in the region of 9 to 12 per cent. It has been recorded that of 234 still-births which occurred in two Poor Law establishments in Liverpool, 6·4 per cent. were definitely proved to be due to syphilis; whilst a report which I have recently received from one of the lying-in hospitals in London gives the figure at 8·3 per cent. In an article which recently appeared in *The British Medical Journal*, on syphilis as the cause of ante-natal death (5), the authors, as the result of an examination of the products of pregnancy in 100 cases of abortion up to the twenty-fourth week, were able to find bacteriological or serological evidence of the disease only in 12 per cent. of the cases examined, and they are inclined to think that even this figure overstates the case. The whole question is therefore very much in the air, and further research and investigation will be necessary before a reliable conclusion can be arrived at. In the paper which I read at this Congress last year, I suggested that it should be made obligatory on the part of every midwife to notify the supervising authority of any cases with a history of successive miscarriages or still births. Indeed, I went further and suggested that it should be made a legal obligation on the part of any woman who has had a succession of miscarriages or still-births, and who has been proved by the Wassermann Test to be suffering from syphilis to submit herself to treatment by a competent doctor until certified free from disease. I think I can do no better than reiterate the advice, as I am still convinced that only in this way can we hope to reduce the ante-natal mortality from this cause. In this connection I should also like to put forward another proposition with regard to the treatment of venereal disease at ante-natal centres. It is with the greatest difficulty and only after much

persuasion that expectant mothers who are Wassermann positive can be got to attend the venereal diseases centre for treatment. A few may attend on one or two occasions, but never for a sufficient period to ensure the disease being cured. The majority attend only once or never at all, and disappear entirely from the attendance records of both institutions and are lost sight of. I can see no reason why special clinics for expectant mothers and infants suffering from venereal disease should not be held regularly at the ante-natal centres, and that this should be recognised as part of the scheme for the treatment of these diseases. I am perfectly sure that if this policy were pursued the greatest benefit would result.

From the examination of this series of still-births, though it is hardly justifiable to draw firm conclusions from such a small number taken from one area over a short period of three years, certain important deductions may be made. In the first place it must be obvious to everyone who has studied the subject, that our knowledge of the etiology of ante-natal morbidity is woefully lacking, and that the problem of the dead-born child is still very far from solution. Much research work still requires to be done, and more workers are wanted in this department of medicine to do it. But before we can hope for results even from research, two things are necessary. The first is to agree upon a clear definition of the term "still-birth," and one capable of universal application and adoption. The second is to obtain without delay an alteration in the existing law with regard to the registration of births, so as to include still-births. In this connection I would suggest that it should be made compulsory on the part of the doctor or midwife to notify the birth of any child, alive or dead, born after the twenty-eighth week of pregnancy within twenty-four hours to the local authority, and for the parent or nearest relative to register the same within seven days. In the same way it ought to be illegal for the body of any child to be buried or otherwise disposed of until the birth has been duly registered and the burial certificate obtained from the registrar.

Another clear lesson we learn from the figures is that there is a very close association between fertility and ante-natal mortality. This is most important, as it suggests a clue which might lead to the solution of many of our difficulties; at any rate it opens up an avenue which it might be worth while to explore. The question of fertility in this relationship is one for the eugenist as well as the hygienist, and these two working together and in close co-operation with the obstetrician and the pathologist should be able to unlock the door and lay bare the mystery.

It ought to be possible through the ante-natal clinics now being established up and down the whole country, to obtain accurate records of the hereditary and environmental conditions which interfere with conception or pre-

dispose to ante-natal morbidity or death. Similarly, through the lying-in hospitals and the midwifery services generally, more accurate and detailed knowledge concerning maternal and fœtal abnormalities which interfere with successful child-bearing should become available. The regular examination in the pathological laboratory of the bodies of all still-born children, as well as of the morbid products of the gravid *uterus* expelled prior to the twenty-eighth week, should also be of the very greatest assistance in determining the rôle played by disease in the causation of ante-natal death. The information thus obtained from these various sources, when properly classified and collated, should take us a very long way towards a solution of a problem which has meant and is meaning to-day so much to the nation and to the race.

REFERENCES.

(1) "Royal Statistical Society Journal," Vol. LXXVI., Part I, December, 1912.
(2) National Birth Rate Commission, II Report, 1918-1920.
(3) Royal Statistical Society Report, Stevenson, April 20th, 1920.
(4) Carnegie U.K. Trust Report (Phys. Welf. Mothers & Children), Vol. I.
(5) "British Medical Journal." May 8th, 1920.

The Medical Aspects of the Still-birth Problem.

By Beckwith Whitehouse, M.S.(Lond.), F.R.C.S.

I THINK that it will be generally conceded that in Obstetric work success cannot be claimed unless both mother and child issue from the ordeal with safety, and in due course are able to take their place as useful members of the community. To save the mother and sacrifice the child is but a partial success, and although the science and art of Obstetrics has undoubtedly advanced considerably within recent years, in regard to lowering both the mortality and morbidity risks to the mother during child-birth, I am afraid that but little progress has been made towards reducing the foetal death-rate. To-day this question is of very great national importance, and I think that this section of the Congress could not have selected a more useful subject for discussion than the one under consideration. Here in Birmingham the problem is indeed very vital. With the fall in the birth-rate and the heavy loss of population from deaths in the war and from the influenzal epidemics it is essential to make every endeavour to lower the rate of foetal mortality. In the last report issued by the Medical Officer of Health is the statement that during the year 1918, 590 still-births occurred in this City, that is 3.4 per cent. of all births. This is the figure of the number of children born dead, but it does not include the very large addition of babies who die within a few hours or days after birth, from injuries and conditions directly dependent upon their entry into the world, a group to which I believe Dr. Robertson has very aptly applied the term " living still-birth." Now what are the causes which underlie these facts ? Are they sociological, depending upon such factors as housing, occupation, feeding, social status and so forth ? Are they the result of constitutional disease in the parents or fœtus or, on the other hand, are they directly dependent upon various obstetric complications ? These are points which we have to consider in order both to crystallise our current views and to formulate rules for guidance in the future. On some of the questions data are already available. On others, however, there is scope for much research, and we are only able to suggest, whereas in a few years it may be possible to dogmatise. Antenatal research is at present in its infancy, and there is much spade-work yet to be accomplished before our knowledge of some cases of intra-uterine fœtal death is appreciably increased. A distinct advance in the right direction is being instituted in Birmingham at the initiative of the Medical Officer of

Health by appointing this autumn a research Pathologist, to work at the problem in association with the Obstetricians and Gynæcologists practising in the City. Public funds could not be expended in a better way than advancing Medical Science by research on these lines, and I am confident that the results attained will fully justify the expense entailed.

The Public Health Department in Birmingham has already commenced an investigation into the causes of still-birth and in the report for 1918 some very interesting facts and figures are given, more particularly in connection with the sociological aspects of the problem. 440 cases have been followed up on the lines indicated in the two forms given below and issued by the Medical Officer of Health.

Mother's Name.....Age....
Address .....
Sex of Child.....Leg. or Illeg. ?.....
Date.....Gestation.
Duration of Labour.....Presentation .....
Macerated .....
Possible Cause .....
Previous Still-births .....Live Births.....
Died in first Year.....Miscarriages .....
*Conceptions (1)(1).....(2).....(3).....(4).....(5)
(6).....(7).....(8).....(9)..... (10)....
Mother's Occupation.....
How long at work in pregnancy.....
No. of Rooms .....
Doctor or Midwife .....
Present at Birth ? .....

*M—Miscarriage. S—Still-birth.
L—Born Alive. (L)—Died within 14 days.

Visitor .....

Name .....Sex ? .....
Address .....Leg ? .....
Date of Birth .....Premature ? .....
Character of Confinement..... .....Child
Midwife or Doctor .....Mother's Age .....
Minded by .....
.....
Death ? Date .....Cause .....

Previous History :
Mother's Health .....
Miscarriages.....Still births.....Born alive.....Now living.....
Health of living.....
Died in 1st year and causes.....
.....
Mother's Work :
During present pregnancy .....
Ceased.....months before confinement.
Work after confinement.....
Commenced.....months after.
Father's Health .....
Occupation .....
House :
No. of rooms..... Rent.....Condition .....

Sociological Factors.—I do not wish in this paper to occupy your time at any length with the sociological factors, since my duty is more directly concerned with the Medical aspects of the discussion. There are some points, however, in Dr. Robertson's report that are of considerable importance, and to which I draw your attention. The first is that there appears to be very little difference in the number of still-births in the poorer and least healthy parts of the City and those in the residential and healthiest wards. The average of the poorest is 37, and that of the healthiest or, if I may say so, the most aristocratic is 38. Again, industrial work on the part of the mothers does not appear to react unfavourably on the incidence of still-births, for in 411 cases, 242 of the mothers were occupied at home and 169 were employed industrially. Of the latter 64 were at work for 6 months or more of the pregnancy, whilst 17 only were at work for less than three months. Legitimacy again is not a factor to be considered, since in 333 instances the baby was legitimate. In only 24 was it illegitimate.

Housing and overcrowding on the other hand appear to have some influence, for the proportion of still-births occurring in houses with from 3 to 6 rooms is 395 against 34 in houses with from 7 to 8 rooms or over. This is only to be expected, since in the presence of a difficult obstetric complication the chance of both mother and child cannot be so good as when every facility is available. These figures are a strong argument in favour of the provision of increased institutional accommodation for pregnant women in the crowded and insanitary areas of the City.

Constitutional Factors.—The health of the expectant mother has for many years been considered to have an important bearing upon her offspring.

This view is a healthy one, and within recent years has had practical demonstration in the establishment of various pre-maternity clinics. I think that we shall all agree that healthy parents are more likely to beget healthy children, but whether the incidence of actual still-births will be diminished by such clinics remains to be seen. I have already noted that from the figures available in the first report there appears to be little difference in the proportion of still-births amongst the poorer and richer members of the community. Amongst the latter it is reasonable to suppose that every precaution known to science is taken, and yet the risk of still-birth is proportionately the same as for the working classes, an interesting fact to say the least of it.

Of constitutional causes two conditions appear to warrant special attention. One is *Venereal Disease*, the other is chronic *Alcholism*. As regards the former Syphilis is still regarded as being a very potent factor in the production of intra-uterine fœtal death. With the establishment of Venereal Clinics throughout the country a mass of material is yearly becoming available upon which we shall be able to confirm and, if necessary, revise our current views. I recently investigated collectively the obstetric histories of the women who have attended the Venereal Clinic at the General Hospital during the past year and found that out of a total of 209 women 566 children had been born alive, whilst the still-births numbered 64, a proportion of 10.1 per cent. of the total. A fallacy naturally occurs, however, in this gross number, since in many cases Syphilis was contracted late in the obstetric life of the individual patient and cannot have had any influence upon the previous pregnancies. This error is to a certain extent eliminated in the case of the Tertiary Syphilitics, and in those who contracted the disease actually during their pregnancy. 93 cases of Tertiary Syphilis have been collected, and amongst these women 293 children were born alive and 51 still-born, a percentage of 14.8. A very striking feature was revealed also during the investigation, *the very high infant mortality attached to the children of syphilitic parents* from causes not necessarily due to the disease itself, but pointing to lowered general vitality. Although the pregnancy terminated in the birth of a living and often premature but viable child, and therefore could not be labelled " still-birth," the infant did not survive, and therefore fell into that large group of " potential still-birth." Syphilis in the parents, if untreated, therefore, not only increases the risks of fœtal intra-uterine death, but to a marked degree diminishes the chances of survival after birth. The investigation of the place that this disease actually occupies in the production of still-birth is rendered difficult by the influence that pregnancy exerts over the Wassermann reaction. Evidence is accumulating which shows that pregnancy temporarily destroys the value of this diagnostic test, both in the mother and

the child immediately after birth. Case after case has occurred in the in-patient Venereal Maternity Clinic at the General Hospital in which the reaction is negative, both in the mother and infant, and yet it has later become positive with clinical evidence of the disease. I have not time on this occasion to consider the subject at length, but I would state that fortunately *thorough treatment of the mother during her pregnancy undoubtedly diminishes the risk of still-birth.* In intra-venous injections of one of the various synthetic arsenical preparations now in use, we have, undoubtedly, a very valuable means at our disposal of combating one aspect of the still-birth problem. During the past year 25 women suffering from Syphilis have been treated during their pregnancy at the General Hospital and admitted to the Institution for their confinement. It is interesting to note that amongst these patients *no still-birth occurred.* Further, it was possible to have the children directly under control from birth, and although many presented subsequently some evidence of infection, the lesions were nearly always *slight* and *responded readily to treatment.* Only one infant died in the Institution, and only one after leaving the Hospital, and this from a cause not directly attributable to the disease. (Enteritis.)

It appears, therefore, that we have here at least one method of reducing the percentage of still-births. By treating energetically throughout her pregnancy every expectant mother suffering from Syphilis, either active or latent, it is possible to diminish the risk of still-birth from this cause to a very considerable degree.

With regard to alcholism, we are on less sure ground, as but few statistics are available apart from the evidence shown this year in the report of the Royal Commission, and published under the title of " Problems of Population and Parenthood "—a volume which I strongly recommend for your perusal. We know that various diffusible toxic agents are capable of being transmitted to the fœtus viâ the placental circulation, with deleterious effect. It is very reasonable to suppose, therefore, that alcohol may act in certain concentrations as a direct poison. Isolated cases are recorded which appear to confirm this suspicion, such as an instance published by Vidal*, where a woman was delivered of a still-born child shortly after an orgy of absinthe drinking. Cases such as this occur from time to time in obstetric practice and point to the necessity for further investigation and research on these lines. Possibly America may be able to put forward some interesting figures during the course of the next few years !

Other constitutional diseases on the part of the mother do not appear to exert a very profound influence upon the life of the fœtus, as the following tables show.

* (Soc. d'Obst. de Toulouse, March, 1910, p. 145.)

Factors concerned with the Fœtus and Method of Delivery.—By the courtesy of Dr. Thomas Wilson I have been able, for the purpose of this paper, to refer to the figures of the Birmingham Maternity Hospital for the period of the past ten years. The information so obtained has been of the greatest use in ascertaining the relative value of the various known factors concerned in the causes of still-birth, from the obstetrical standpoint. During the period under review, 1910-1919 inclusive, 5,591 infants have been born in this institution. Of these 4,876 were born alive and 715 dead, a percentage of 12.7. Of the latter a cause of ante-natal fœtal death is assigned in 653 cases (91.4 per cent.) and unknown in 62 (8.6 per cent.). These results are expressed in Table 1.

TABLE 1.

BIRMINGHAM MATERNITY HOSPITAL.

PERIOD 1910-1919.

Total number of infants born	5,591	
Infants born alive	4,876	
Still-births	715	(14.6%)
Cause of still-birth known	653	(91.4%)
Cause of still-birth unknown :		
Macerated fœtus, etc.	62	(8.6%)

Analysing the known causes of still-birth in the 653 available cases it is possible to classify the material as shown in Table 2.

TABLE 2.

KNOWN CAUSES OF STILL-BIRTH.

Constitutional Maternal Diseases	18
Prematurity	30
Toxæmia	94
Anomalies of Fœtus	36
,, ,, Umbilical Cord	27
,, ,, Placenta	256
Obstructed Labour	192
Total	653

The undue proportion existing between the individual items in this table calls for a more detailed analysis of the several factors. A classification has therefore been made of the pathological conditions present. This is shown in Table 3.

TABLE 3.

CONSTITUTIONAL MATERNAL DISEASE :			
Mitral Disease	11		
Chorea	1		
Cancer of Cervix Uteri	1		
Ovarian Cyst	1	18	
Exophthalmic Goitre	1		
Meningitis	1		
Transverse Myelitis...	1		
Encephalitis Lethargica	1		
PREMATURITY :			
Prematurity	26		
Premature Rupture of Membranes	1		
Twins	2	30	
Triplets	1		
TOXÆMIA :			
Eclampsia	64		
Albuminuria...	27	94	
Hyperemesis	3		
ANOMALIES OF FŒTUS :			
Hydramnios	19		
Hydrocephalus	6		
Anencephalus	7		
Atalectasis	1	36	653
Fœtal Ascites	1		
Spina Bifida	1		
Fœtal Heart Disease	1		
ANOMALIES OF UMBILICAL CORD :			
Prolapse of Cord	25		
Cord round Neck	1	27	
Thrombosis of Cord...	1		
ANOMALIES OF PLACENTA :			
Placenta Prævia	205		
Antepartum Hæmorrhage	51	256	
OBSTRUCTED LABOUR :			
Obstructed Labour (Forceps)	85		
Craniotomy	50		
Malpositions (Version, etc.)	49	192	
Cæsarean Section	8		

In considering the items set forth in this table, three facts are at once evident :—

(*a*) The very high fœtal death rate from *Placenta Prævia*.

(*b*) The danger to the child in *Obstructed Labour*, whether due to malposition or to disproportion between the fœtal head and pelvis, and whether forceps or version are employed in such a contingency.

(*c*) The great risk to the fœtus in *Eclampsia*.

Placenta Prævia.—The importance of this complication as a cause of antenatal fœtal death is very great. Of the number of still-births investigated it accounted for 31.3 per cent. of the total, a very high proportion. As a matter of fact, even this figure does not represent the total fœtal mortality, for an addition is required in respect of the children who are born alive, but who subsequently die from injuries received at birth. In the 10 years under investigation 317 cases of Placenta Prævia were admitted to the Maternity Hospital. Of these 212 babies were still-born and 33 died in hospital, giving a gross fœtal mortality of 77.2 per cent. This is a deplorable fact, and causes one *seriously to consider whether some improvement may not be effected by revision of the current methods of treatment.* The methods of delivery at present practised are indicated in Table 4, with the corresponding fœtal and maternal death rates.

TABLE 4.

SHOWING METHODS OF DELIVERY IN PLACENTA PRÆVIA.

Method.	*Cases.*	*Fœtal Death.*	*Percentage.*	*Maternal Death.*	*Percentage.*
Version	211	193	91·4	9	4·2
Natural	35	16	45·7	0	0
De Ribe's Bag	15	11	73·3	3	20·0
Rupture of Membranes ...	11	9	81·8	0	0
Forceps	9	9	100·0	2	22·0
Cæsarean Section	5	2	40·0	3	60·0
Vaginal Cæsarean Section	4	2	50·0	0	0
Induction	2	1	50·0	0	0
Extraction of Breech ...	2	1	50·0	0	0
Vaginal Pack	1	0	0	0	0
Hysterectomy	1	1	100·0	1	100·0

There can be no doubt from the table that the favourite method of treatment for Placenta Prævia is *Version, with a fœtal mortality in this complication of 91·4 per cent.*, and a *maternal mortality of 4·2 per cent.* The next method of election, if the case is so urgent that it cannot be left to nature, is the use of De Ribe's Bag. Here the fœtal mortality is 73·3 per cent. and the maternal 20 per cent.

I am firmly of opinion that much improvement can be effected in the treatment of Placenta Prævia, by *the more general substitution of Cæsarean Section for Version* and the other methods at present in use. The Cæsarean operation in capable hands is very safe. During the last 10 years it has been performed 162 times at the Maternity Hospital, with varying indications, pre-arranged and emergency, and the total mortality *from all causes* is only 5·5 per cent.

It is not correct to estimate the maternal risk of the operation as being 60 per cent. in the case of Placenta Prævia, since the method was only employed upon five occasions. 312 patients were delivered by other methods, and it is more than probable that if the operation was generally adopted at an *early* period in the case, the maternal risk would be very considerably lowered. Of the three deaths recorded in Table 4, the women were in labour at the time the operation was performed, and in one case hæmorrhage had been actually in progress for 10 days before the patient was sent into the hospital!

The best means to save both mother and child undoubtedly lie in *early diagnosis of the complication.* The *first hæmorrhage* should be the danger signal, and once the diagnosis is made no time should be lost in the endeavour to see what nature will do. Practitioners should not regard Version as the proper method of treatment, but rather look upon the complication as one possibly requiring abdominal section. Even Version, with its appalling fœtal mortality of 91·4 per cent., is not without risk to the mother, *viz.*, 4·2 per cent. mortality. When this is compared with the 5·5 per cent. mortality rate for Cæsarean Section, performed for all emergencies, there is, after all, very little to be said in favour of the time-honoured method.

With regard to the remaining two points that I have raised, the risk to the child in obstructed labour and eclampsia, I shall say but little. That there is room for improvement is obvious, especially in connection with the former. 192 children were lost in 10 years, from causes which require severe obstetrical operations for obstructed labour. This group can only be diminished in numbers by *careful clinical examination before labour* actually commences. It is here that ante-natal clinics can play an all-important part. It is well-known that even to-day many women commence labour without a single previous investigation of any kind, either by doctor or mid-wife. Can one wonder, therefore, that in the maternity hospitals throughout the country cases are constantly being admitted where difficult and dangerous operations both to mother and child are called for; cases which might have been prevented had a little more care been expended upon the patient during the later months of her pregnancy. If the Medical profession, as a whole, is too occupied to expend the necessary time in investigating individual cases of pregnancy, then the State must accept the responsibility of providing more ante-natal clinics, where such work can be carried out by routine. The reward will, undoubtedly, be an appreciable lowering of the still-birth figures.

In conclusion, I should like to lay before you the obstetrical history of a remarkable case which has recently come before my notice at the General Hospital. A woman attended the Venereal Clinic and gave the following account of her pregnancies. In 28 years of married life she had had 22 still-

births, two abortions, and one living child which died at the age of nine months from Broncho-pneumonia.

You will probably be surprised to hear that the Wassermann reaction in this case was returned "*Negative*" upon three separate occasions and by different observers! Nevertheless, the patient attended the hospital on account of an ulcer, which clinically had a definitely Syphilitic appearance. In a case like this, and it is not an isolated instance, one is tempted to ask, "What is wrong with the Wassermann Reaction?" We, indeed, have much to learn!

Discussion at page 216.)

Registration of Stillborn Children.

By Alderman J. R. Hurry, Hon. Secretary, British Undertaker's Association, (London).

PROBABLY the question of the registration of Stillborn Children will be considered by many of the Delegates present as peculiar for discussion at this Conference, and yet I think I shall be able to convince you that it is important in connection with Maternity and Child Welfare, so much so that the Association of Medical Officers of Health for the Metropolitan Boroughs of London has seriously been considering the question for some time past with the object of acquiring data on the subject.

The members of the Funeral Trades in the country also see the evils of the present system and have done so for many years past. As long ago as 1898, I read a paper to the members of the British Institute of Undertakers at the Memorial Hall in London, and a Resolution was passed that the Government should be petitioned to alter the conditions that then and now exist.

The Law as it exists, and if there is a law on the question, is that the person present at the birth of a stillborn child can give a Certificate as follows :

> This is to Certify that I Delivered
> Mrs.....
> of.....
> of a stillborn (male or female) child on the.....
> day of.....
>
> Signed.....
> *Midwife*

In a like manner Medical men can do the same. Only as recently as the 5th April, 1920, a Certificate of Death of a Stillborn child was given by a Medical man of Paddington, on a piece of paper that had correspondence from the Panel Committee of the County of London, Staple House, 51, Chancery Lane, on the one side and on the other the following Certificate :—

> This is to Certify that I Delivered
> Mrs.....of.....
> of a female stillborn child of doubtful viability on the
> 4th April.
>
> .....
> M.B.
> 5. 4. 20. .....

Prior to the passing of the Midwives Act it was possible for any inefficient person to be present at the birth of a child, and if stillborn, to give a Certificate on any dirty piece of paper, and the same would be accepted by the majority of Cemeteries as an order for the burial of the body.

Now, how does this affect the question of Maternity and Child Welfare to us, who are representatives of Public Health Authorities and interested in such subjects? It is this: The present mode of registration of stillborn children and in fact the registration of deaths generally, is not satisfactory from the standpoint of Maternity and Child Welfare. In the case of Still-born children and the disposal of the same or the disposal of unwanted children, under the present conditions, arrangements can be made by unscrupulous persons in the following manner. A woman is in trouble, arrangements are made by the father, or even the mother, that whatever happens the child is not to live. This is quite easily accomplished, a Certificate, which may be genuine or not, is written and signed, an Undertaker called in to remove the body, and the same is buried. If the Undertaker is a person of ill repute, for a consideration he can dispose of the body in any way he desires as long as he is not found out. Again, the Undertaker may innocently become a party to the disposal of an unwanted child by removing the body for burial on receiving a Certificate that may be false in all particulars and so complete the disposal. Homes might exist in populous areas, especially established for this purpose. The children born in such homes could be disposed of at birth, the Certificates issued for burial and the orders for funerals given to Undertakers in different localities, who would most probably bury the bodies in different Cemeteries and no one would be wiser that such wrong was being done.

The indifference that exists amongst some Medical men regarding the registration of the death of children living only a few hours, is such that it is important that the existing laws be amended.

Previously I mentioned that the registration of deaths was not at all satisfactory, loopholes may be found for all kinds of malpractices.

At the present time the mode of registration is as follows:—

Immediately on the death, the Medical man issues the Certificate, which is taken by the relative present at the death to the Registrar. The death is then registered, and a Certificate given to the said relative to the effect that the death has been registered. This certificate is then handed to the Funeral Director. Should this be lost or left at home, the Funeral Director must notify the Registrar within seven days that he buried the person of a Mr., Mrs., or Miss.....of.....,..... on.....
If the Registrar has registered the body, nothing more is heard of it.

Now, suppose for one moment that there is need for the removal of the mother as well as the child. The person desiring the death, the Medical practitioner or the representative of the nursing or lying-in home, with the Funeral Director in collusion, agree that the death is not to be registered.

The Funeral Director then proceeds to bury the person of somebody else, certifying to the Registrar that the Certificate of Death has been lost. This Certificate is then used for the burial of the unregistered person, who will be interred in a Cemetery some distance away, under the name of the person whose Certificate has been certified as lost. Thus all traces are removed, and there is no possibility of discovery.

Probably this is the ultimate end of so many of the young women of the country whom we read of in the Press as having disappeared from home and never being heard of again.

My suggestions for the rectification of the present system are extremely simple.

Every child born, whether having a separate existence or not, shall be registered and every child (stillborn included) and adult dying shall be notified to the Registrar on a printed form of Certificate. The Registrar shall then issue a Certificate of notification of death, stating in the same the cause of death together with the other particulars, this will be handed in turn to the Undertaker who, in his turn, will hand it to the Superintendent or Chaplain with the instruction to record full details of the deceased in a book provided at the Cemetery, or Churchyard, and to return the Certificate to the Registrar within three days of the receipt of the same, or to notify the Registrar that he has buried the body of.....without a Certificate. Further, if the Certificate was not returned within 14 days to the Registrar neither any notification or communication received, it will be the duty of the Registrar to make enquiries as to what had become of the Certificate issued, and the person whom he had registered for burial.

I think I have shown in this short paper the necessity of the Registration of Stillborn Children and also the need for the revision of the Registration Laws for Births and Deaths. If these alterations can be obtained, as they should without any difficulty, they would materially assist the Maternity and Child Welfare work of the country.

Discussion applies to papers by Mr. Beckwith Whitehouse (page 204) and Mr. Alderman Hurry (page 214).

Dr. John D'Ewart (Manchester) stated that the general practitioner was keenly interested in the still birth question as still births so definitely interfered with his standing. Prior to the war registration of abortions and still births was urged on public authorities by general practitioners. Again, many practitioners urged their pregnant patients to visit them regularly during the course of the pregnancy but found great difficulty owing to their innate conservatism and the objections of their older female relatives.

General practitioners also objected very strongly to the twenty-eight week regulation. A pregnancy terminated at the twentieth week was as much

a loss to the state as one terminated by still birth at the fortieth week. Enquiry should take place into the very numerous cases of early termination of pregnancy, the majority of which would probably not show those evidences of placental disease indicated by earlier speeches.

Mrs. AMY HUGHES (London) said that the prejudices of the older women against the ante-natal care of expectant mothers, old habits and superstitions prevented the young mothers accepting modern treatment. It was most desirable that health visitors, midwives, and district nurses should insist upon this all over the country, and educate the mothers in the laws of health for themselves and their babies, using tact and discretion in their campaign.

Dr. C. KILLICK MILLARD (Leicester) said that the record they had heard of conceptions cut short, of abortions, of miscarriages, of premature births, of heavy infant mortality was not very encouraging, and might well justify their asking, "Are we quite sure that the ideals which have animated human beings in the past are the highest ideals?" He wished to suggest that, if they really wanted an improvement we must inculcate the principles of responsible parenthood and discourage the principle of reckless conception without any thought to the quality of the offspring which was being conceived.

Dr. THOMAS EVANS (Swansea) suggested that the key to the causation of the deaths of the full-term still-born, was to be found in Dr. Beckwith Whitehouse's tables, that difficult labour (*placenta prævia* obstructed labour, etc.), was the chief cause. Some inquiries he had made indicated that at the commencement of labour most full-term still-born children were living, and that death took place between the onset and delivery, or within a few hours of birth as the result of the difficulty of the labour, or possibly the result of the unskilled conduct of labour.

Dr. T. SHADICK HIGGINS (St. Pancras) thought that the papers and discussions on the subject of still-birth showed that they were still at a stage where the chief need was for research. The step taken in Birmingham in the establishment of a city scheme of pathological research was in the right direction. The proposed system of the registration of still-births to be followed by the investigation of cases would assist the research to be prosecuted. In the meantime there was excellent reason to provide as many ante-natal clinics as would enable all mothers who could be induced to do so, to attend them. There could be no question of compulsion in this connection. It was important that the clinics should not be independent of those doctors and midwives who had to attend the mothers in their confinement This was only another example of the need for co-ordinating the work of the state system of public health with that of the doctors and midwives who formed the first line of offence and defence in the campaign against disease. In the school clinics and infant and ante-natal consultations a link could be forged between the administrative and general practice, which could eventually be strengthened by the gradual formation of other links.

Sex Education.—A Modern Necessity.

By Norah March, B.Sc.

(Abstract).

IT would seem very fitting that a meeting of practical workers in the cause of maternity and child welfare should include in its subjects for discussion that of sex-education. Such practical workers, as much as any section of health workers, come up against the evil effects of our past, and to a great extent present, policy of neglect.

The scientific study of sex as a function in organic life has developed, of recent years, along popular lines. Therefore, there is less justification for a policy of neglect to-day than there was even a few years ago, under conditions of less enlightenment. Modern scientific information regarding the function of sex indicates that, both in the physical and mental spheres, sex has, in addition to the racial effect of endowing the organism with the power of parenthood, a strong and penetrative contribution to make to the physical and mental efficiency of the individual. The task of sex-education thus in part is revealed as a constructive effort to direct these mental and bodily forces towards the good of the individual, the group and the race.

Apart altogether from the fact that it is, to say the least, unreasonable, to leave out of those organised experiences, which we call education, one of the most important activities of the organism, certain social and racial conditions during the last six years, have in many ways helped to indicate very definitely the need for some constructive policy. Statistics and observations, for example, indicate the increase of illegitimacy, and of venereal diseases. The surplus of marriageable women in this country, coupled with the emancipation of women, complicates the social problem.

Civilised social life imposes many restrictions upon natural impulses, and provision must be made by wise education to secure that such restrictions—essential in the interests of the group—should not prejudice the efficiency and health of the individual. Thus ethical education, in matters of sex, cannot be effectively and valuably carried out by the mere erection of social conventions. It must consist of an intrinsic evolution of the personality towards that real freedom which is expressed by responsible choice of the mode of life.

Thus the principles of sex-education are concerned with :—

1. Training of the individual in bodily and mental habits such as shall contribute towards health, efficiency, and self-control.
2. Instruction of the individual in the facts of sex, parenthood and matters relative thereto.

3. The provision of an environment which shall be stimulative towards high ideals of life.

Sex-education may thus be conceived as beginning right in infancy, and gradually weaving its threads into the whole fabric of childish, adolescent, and mature life. It is a function which all who are guardians of the young should consider, so that each may identify her or his part.

The Teaching of Sex Hygiene—Work in Birmingham.

By Miss M. EWING MATHESON.

(ABSTRACT.)

The teaching of Sex Hygiene is still in an experimental stage.

The importance of such teaching as a means of combating Venereal Disease was brought out in evidence before the Royal Commission.

The chief factors in the education of the child in Sex Hygiene are :—

1. The parent, because such training must be graduated from earliest childhood. 2. The School Teachers. 3. The Minister of Religion.

The necessity, therefore, of training those agents.

Work in Birmingham. Lectures to parents in :—

1. Elementary Schools. 2. Secondary Schools.

The co-operation of and sympathetic help from the Education Authority and Head Teachers.

Adequate teaching in the Training Colleges and Theological Schools.

(*Discussion at page 223.*)

Teaching of Sex Hygiene.

From a Working Mother's Point of View.

By Mrs. C. Guest (Birmingham).

THE importance of such teaching at the present time is clearly realized by every social worker. One has only to read the daily papers, with their sad cases of matrimonial troubles, etc., to feel that something must be done to check the evils around us. The boy and girl marriages, entered into without any thought as to the responsibilities of marriage, the open immorality, and the increasing number of cases of venereal disease, bring before us the question, "Where have we failed?" Is it not answered in the fact that no sex-teaching has been given in the past? Boys and girls were allowed to grow up and develop without any training at all in what should be of the most importance—their responsibilities as the future parents of the race. Hence the result; can one wonder? And so to-day we are considering what is to be done to remedy things and most people advocate the teaching of sex-hygiene but are not quite clear as to the best method of teaching it. Shall it be taught by teachers who are specially trained in this subject? or shall it be taught in school by the ordinary school-teacher? or, in the Home by the parents or guardians? While it may be a good thing to have a specially trained teacher for boys and girls whose training at home has been neglected, my objection to it generally is on the ground that the teaching is begun too late—the adolescent age has enough vital problems of its own, without that. There should be a good strong foundation laid in sex-teaching before that age. The ordinary school teacher can be of great assistance by the use of nature lessons, etc., but the first lessons, in my opinion, should be given by the mother in the home. She has every advantage in her favour—she has sole control for the first five years of a child's life, and at that time the most lasting impressions are made. Some mothers of the working class raise difficulties—they say they are not educated enough or that they have no time in their busy lives, there is enough to do in keeping the home and children clean and getting meals. Quite true! there is enough to do and far too much sometimes, but there is always time to answer a child's question, is'nt there? And a child's education is partly gained by questions and answers. To the other objection, that of not being sufficiently educated, all that is needed is a little common-sense and tact, one does not talk to a child in big words but in simple language. Many mothers are beginning to see this point of view and to realize that the best results are obtainable if training is begun early.

Educational experts are adopting this theory by advocating the system of nursery schools.

I suggest some methods which may be helpful to young mothers who desire to train their children in a right way. Begin in the cradle days by not letting your baby have everything it cries for: that way means a spoilt child. Then when you teach it cleanliness, try to impress upon the child's mind the fact that the body is a wonderful piece of mechanism, fashioned so that every part has its own work to do, and that we must see to it that through no neglect or ill-treatment on our part, it shall get useless. You will not be able to do this all at once, but gradually, as the child developes, this lesson of respect and care for the body as the temple of the soul can be taught. When you take your children out in the fresh air, you can tell them of the flowers and insects and birds, of the father and mother bird, making a cosy nest and then of the eggs laid in it by the mother and kept warm by her body, until hatched out and then of the busy time for both birds to feed them, until the baby birds can look after themselves. Most children have pets of their own and it is a very good thing too, because so much is learnt that way. From these nature lessons it is but a small step to that of the baby in the home and there is no nicer way of telling a child, who asks "where baby came from," that it came from a seed, which mother kept warm in her body until it was big enough to be born, just the same as the seeds in the garden were kept warm in the earth until big enough to come out and grow in the sunshine and the rain. This also explains to the child the reason of mother's great love, because the child is part of herself. All these lessons can be given in the ordinary every-day life of a mother and her children, boys and girls alike: no guide is needed by the child's own questions, and a mother's own sense will tell her how and when to give any information. In fact, no hard and fast rule can be laid down, so much depends on a child's development. To any who may object to this method of teaching, thinking it may lead to chatter among other children, I would say that my experience tells me that when a child is told the truth about anything, he or she does not bother about it any more—it is only when things are hushed up and made mysterious that a child's curiosity is aroused and questions asked of anybody and everybody.

A little girl I knew, had a pair of bantams and was heard to say to the hen, just about to lay an egg, "Never mind, henny, you'll soon be better," and another child I knew, when told that her pussy would soon have some kittens, busied herself making a nice bed in the cupboard for them and was so careful not to hurt poor pussy. This shows that a spirit of love and care for others is being taught to the children, which is never forgotten

by them. But one thing which perhaps will have more weight in combating any objections is the fact that a child has to gain this knowledge sometime, and children, who are of the poorer classes, have to go to schools where there are large classes and where it is impossible for any teacher to know everything that is going on, and we know that much undesirable talk goes on at times. Is it not infinitely more desirable that sex-knowledge shall be given in a nice clean way to the child at home, than for it to pick up any rubbish outside? So much for the childish days, but the time goes on and the child nears the adolescent age, with all its changes. Are you going to take the child on one side and tell him or her what it means? It is a parent's bounden duty to do so at that time, even if instruction of some kind has not been given previously. It is just at the time of change from childhood to young men and women that the most help is needed. And if there is a strong bond of love between parent and child, if a child reposes all confidence in the parents, then, naturally, will the child, either boy or girl seek advice from its parents Naturally and quite easily, too, will the mother, or father maybe, explain the changes taking place, tell of the responsibilities in connection with them, and warn of probable temptations. The adolescent can be told of the need to keep a clean, healthy body, in readiness for the time coming on when marriage is desired, the harm that is done to the children of the future if an unhealthy life is led. Need one say more except that to urge every young mother, who earnestly desires the welfare of her child, to commence this training early. Teach a love of truth, care for the weaker ones, self-control, cleanliness and a high standard of its responsibilities as future parents of the race. Establish a mutual bond of love and confidence between you and the child, and, doing this, you need not fear the time to come when the child has to stand alone. It seems to me that if every mother shouldered her task, in this way, within the next few years, a great change would be apparent. Everyone realizes the need for something to be done; shall we women, mothers in the home, do that part which lies nearest to us? It may not seem much, perhaps, just to train one or two young lives in the right way; how much, it *really* means can only be realized after many years, when the children, so trained, have passed on the training to their offspring and a cleaner, healthier, happier race is the result.

[*Discussion applies to papers by Miss Norah March (page 218), Miss Ewing Matheson (page 219), and Mrs. C. Guest (page 220).*]

Miss EDITH COOPER (Birmingham), said that sex-education, as a necessary part of Education was an acknowledged fact. The parent's part was one and the teacher's another, but neither up to the present had had any preparation.

Therefore the Congress was asked to bring pressure to bear on the Minister of Education to see that adequate provision was made in all training colleges for such instruction.

That experiments had been made in Birmingham in the training of mothers to give this instruction, and in the training of the girls in the Elementary Schools. An instance was given of a school where this training formed a systematic part of the whole school life with great success.

Dr. MARY STURGE (Birmingham) pointed out that many of the restless discomforts of young adults which were supposed to be due to the development of the sex organs, were really due to lack of the habit of drinking water, to the lack of sufficient sleep, of fruit, and of exercise.

Parents and teachers must be urged to give children access to pure water, and to teach them to drink it many times during the day. The danger of alcoholic drinks should be taught. Dr. Dukes, the physician of the great boys' school at Rugby, pointed out that, "Beer is a drug which deadens the will-power and excites the animal instincts of the young; its relation, therefore, to immorality is most momentous."

DR. E. COLSTON WILLIAMS (Glamorganshire), thought there was a good deal of haziness as to what was included in sexual hygiene. Some had argued for teaching the biological facts of sex, others for moral teaching. There was every reason for teaching such facts and they could be taught by all who knew them, but a knowledge of biology did not make men and women chaste. On the moral side, the feminist movement should press for greater consideration of the woman in sexual relations. In sexual irregularity women suffer disproportionate social stigma.

Dr. C. S. THOMSON (Hyde) stated that he had been invited to deliver lectures to children on the subject in his district, and considered that it was his duty and the duty of every medical officer of health to do so.

Dr. C. KILLICK MILLARD (Leicester) said that in Leicester they had been trying an experiment in the teaching of sex hygiene. The Leicester Branch of N.C.C.V.D. had appointed two lecturers (part time), of either sex, from the ranks of the Council School teachers to give lectures on sex hygiene at the twelve evening continuation school centres. They worked in co-operation with the Education Committee, and the superintendent of the centre distributed invitations to the lectures, which were addressed to the parents and which the children took home in a sealed envelope. The result had been most encouraging and much commendation had been evoked.

As regarded secondary schools, a somewhat different method had been followed. As most secondary school pupils left at the end of the summer

term, they found that one special lecture during this term given to "leavers" only, would catch most of them. For these lectures a specially qualified lecturer was engaged. All the secondary schools were asked to co-operate, and the invitation was issued in the first instance to the parents.

The idea was not to supplant but to supplement instruction which should be given by parents with more systematic instruction by a specially qualified teacher. He regarded such systematic instruction as vitally important, for ignorance of sex matters was to some extent responsible for immorality.

Papers were also contributed by H. W. Pooler, M.B., Ch.B., on "Infant Welfare in Rural Areas," and Mrs. E. M. Broome on "The Need of Sufficient and Suitable Recreation for Children." Limitations of space prevent them being published in the Journal, but copies can be seen in the Institute Library.

children suffer," and urged the necessity for further teaching, not only in our schools, both elementary and secondary, but also at welfare centres and by popular lectures up and down the land, on the following points :—

1. Care and choice in buying of food, so that the best value for the money spent is obtained.
2. Importance of well-ventilated pantries or larders, where food may be kept in good condition.
3. Elementary knowledge of food values and digestion.

The Hygiene of the Child.

By CATHERINE CHISHOLM, B.A., M.D.

INDICATED that training in hygiene should lay stress on :—The formation of good habits, in this way gaining the nervous system as our ally—The need for rest—The need for sufficient simple nutritious food at regular intervals—Attention to clothing, simple, light, warm and covering the limbs in winter—Provision of baths—Facilities for games and exercise—Attention to personal carriage and the early treatment of developing deformities—Self-control of the body.

CONGRESS AT BIRMINGHAM.

SECTION E.—INDUSTRIAL HYGIENE.

Presidential Address, by NEVILLE CHAMBERLAIN, M.P.

THE subject with which this section is concerned is comparatively speaking a new one, and its name, even to-day, is only just beginning to assume a familiar aspect. Yet ever since the Industrial Revolution which took place in the 60 years of George III's reign, the health of the workers in our factories has been receiving increasing attention inspired first by humanitarian motives only, but later supplemented by an enlightened self interest which sprang up as employers gradually perceived the truth that physical health is the first condition of the conduct of business.

Accustomed as we are to-day to the magnificent workshops of the great industrial firms and to all the checks and safeguards of Government inspection, it is difficult to realise the conditions which prevailed in the early days of factories.

It was in the textile trades that the great expansion took place in the 18th century, and the sudden demand for labour brought vast numbers of agricultural labourers and Irish immigrants into the towns of Lancashire and Yorkshire without any corresponding increase in the housing accommodation, or in those amenities in the shape of open spaces and other opportunities for recreation which are only now beginning to be provided.

An enormous demand for child labour sprang up and horrible accounts are given of the conditions under which they worked in the cotton mills. Employers used to contract with the parish authorities who thus found a market for their surplus children. We learn from a Hansard report, dated June, 1815, that one employer contracting with the Parish Authorities in London, agreed to take "One idiot with every 20 sound children delivered." The children lived in "prentice houses" adjoining the mill; they slept on the floor between two blankets.

In the mills themselves unspeakable cruelty was practised to keep tiny children at work. 74 hours a week including Saturday was not considered unreasonable, while Sunday morning until 12 was employed either in cleaning the machinery or going to church. The latter entailed a wash; on this account it is said the children preferred the former. From evidence given before Sadler's Committee we hear of a mill where, all through the summer, the children worked daily from 3.30 a.m. to 9.30 p.m., and at one mill aptly called Hell's Bay, for two months in the year, they not only

worked regularly from 5 a.m. to 9 p.m., but for two nights each week worked all through the night as well. Mr. and Mrs. Hammond in their book the "Town Labourer," say—"The overseers who gave evidence before this committee did not deny that their methods were brutal; it was impossible to keep such a system working except by the driving power of terror. Scarcely an hour passed without the sound of beating and cries of pain. Fathers beat their own children to save them from a worse beating by other overseers. In the afternoon the strain grew so severe that the heavy iron stick known as the billy roller was in constant use and even then it happened, not infrequently, that a small child as he dozed, tumbled into the machine beside him to be mangled for life, or, if he were more fortunate, to find a longer Lethe than his stolen sleep."

There were no regular meal hours. The unfortunate children snatched and swallowed their food as they tended the machinery in the midst of the dust and flue. Their appetites soon disappeared under such conditions; it is even recorded that emetics were freely administered to enable them to rid their stomachs of the particles of dust with which the atmosphere of the mill was always choked.

Adults were hardly better off; these people accustomed to the open air of the country and free exercise of their muscles were now confined in factories where they worked for 14 hours a day, in a temperature of 80° to 85° under the strictest discipline which did not even allow them to obtain a drink of water, and subjected them to fines for the most trivial offences. In the fines list of a factory at Tyldesley, near Manchester, we find the following (1823) :—

1/- if a man is found opening his window.
1/- if found washing.
1/- if heard whistling.

Food was always eaten in the shops, and sanitary arrangements were non-existent.

It is not to be wondered at that under such circumstances the physique of the workers was stunted, their lives shortened, and their moral and mental development arrested.

It must be remembered that the textile processes are not in themselves dangerous or poisonous in their effect on the workers, but as the development of industry proceeded other trades sprang up which created a list of new diseases. Epileptic convulsions known as encephalopathy and wrist drop—a paralysis of the fingers—attacked lead workers. Potter's Rot devastated the workers in china and earthenware. Plumbism or lead poisoning was rife in the shops where lead glaze was used. Millstone grinding brought on pulmonary consumption—the men seldom living beyond 35 or 40. Steel grinding brought on phthisis and asthma. The intro-

duction of match making set up phossy jaw. Brass workers were attacked by brass ague, bronchitis and dyspepsia. Chromate and bichromate of potassium introduced chrome eczema. "chrome holes," and erosion of the septum of the nose. Workers in rubber suffered from paralysis of the arms and legs, the fumes producing a state of intoxication which sometimes led to insanity. Jute workers caught tetanus. Skin diseases such as dermatitis and oil acne became common. Happily most of these distressing diseases are now things of the past.

We have travelled a long way from the conditions I have briefly referred to, and the efforts of progressive employers backed by legislation and the ever expanding organisation of the Home Office, have brought about a new industrial revolution of a happier kind.

In dangerous and unhealthy trades, perhaps the greatest factor in improving the conditions has been the introduction of artificial ventilation together with the enlargement of shops in proportion to the numbers employed ; but scientific research has also done much to help by the discovery of harmless substitutes for the poisonous ingredients, and the rapidity with which the new affections introduced during the war by the handling of T.N.T. and aeroplane dopes were dealt with, is testimony to the advance in our methods of caring for the workers' health.

In other trades not in themselves unhealthy hours have been enormously reduced, and the introduction of mechanical appliances has abolished some of the most exhausting forms of labour ; protective clothing has been introduced and proper washing and sanitary accommodation has become the general rule. To-day, however, as always throughout our industrial history, there is still an enormous difference between the practice of the best and the worst factories in every industry, and incidentally it is interesting to note as a set off against the obvious disadvantages of large concerns as affecting the relations between employer and employed, that it is just these large firms who generally carry out most fully their moral responsibilities towards their workpeople. In this connection it may be interesting if I detail the work that is being done by one large local firm for its employees in the way of industrial hygiene :—

The Medical Service comprises a central and four branch surgeries ; a wheeled ambulance is kept at each branch and a motor ambulance at the main surgery. Trained nurses are in constant attendance and a visiting doctor attends each day at 2.15 for as long as required. There is no charge for his treatment, his salary is paid by the firm. A dental surgery is run in connection with the main surgery and advice is given free ; treatment may be obtained and paid for by deduction from wages if desired.

For Recreation a club house and grounds comprising 30 acres have been provided. The club house contains accommodation for holding committee

meetings, debates, and lectures. There is a billiard and chess room, library, tea rooms, and separate common rooms for girls and men. If a member wishes to give a family party he may reserve a room for the occasion. A subscription of 5/- a year is charged.

The playing fields and tennis grounds are provided with pavilions at which light refreshments can be obtained and dances held.

The Factory is constructed so as to provide every facility for air and light. The maximum of light is obtained by constructing the windows so that they reach the ceiling and only a very narrow tier of brick separates them. By this arrangement it is very unusual to have to use artificial light in the day time, but a special study has been made of the placing of the lamps with a view to securing perfect illumination.

Continuous artificial ventilation by dust exhausters and fans ensures the removal of swarf, small pieces of metal and other substances likely to cause dust. Landings and staircases are cleaned daily. From 12 o'clock on Saturday until Monday morning all windows are opened and all floors thoroughly cleansed. Lavatories with hot and cold water, soap, nailbrushes, and towels are provided, the latter supplemented if workers desire, and services of drinking water are laid on. There is a gymnasium with shower baths for boys and girls for which no charge is made.

In considering such aspects of modern factory life and contrasting it with the unnatural and hideous conditions of 120 years ago there is much matter for congratulation—but none for complacency, for industrial hygiene is still rather a collection of experiments than an organised science. What strikes one in reviewing the successive advances that have occurred is that they are mostly the results of an endeavour to cure existing evils. From time to time attention has been drawn to something in the nature of a scandal, public opinion has been roused and a remedy sought for and applied.

What I would submit is that the path to future progress lies rather in prevention than cure. In spite of all the advances in science, mechanical, electrical, chemical or physical, the conduct of industry still fundamentally depends upon the human machine which differs from all other machines, in that the source of its energy is not physical but mental. To keep it in a state of the highest efficiency it must be studied scientifically and individually. It is not sufficient to protect the worker from disease, to provide him with the most perfect lavatories, or even to put all the resources of medicine and surgery at his disposal. His mental powers, their strength and their limitations must be kept in view, and if this is true of the man, it is even more so of the woman.

I imagine that it is probably correct to say that loss of output, accidents to workmen and damage to machinery are more frequently due to mental than physical fatigue. The weakening of concentration, or the lag in the

conveyance of impressions to the brain, just dislocate that almost instaneous correlation of hand, brain and eye which is characteristic of perfect physical health. It follows, therefore, that industrial hygiene must include pyschological as well as physiological studies.

I once heard a man say that if he had the conduct of a factory he would have a band playing during working hours, and though perhaps the remark was not intended to be taken quite literally, I have often thought that it showed a remarkably acute perception of the importance of a cheerful and active mental condition in the factory worker.

Viewed from this angle it will be seen that even the leisure of the workers is very much the concern of the employer, and that recreation in all its forms, indoor or outdoor, may well be considered an important factor in the ordering of modern industrial life.

In the recently introduced Ministry of Mines Bill there appears a very novel proposal, namely, the establishment of a fund provided by a statutory levy of 1d. per ton on the industry for the special well-being and recreation of the miners. The proposal has not been received with enthusiasm by the owners ; nevertheless, I believe the principle to be sound and I should be glad to see it extended to other industries in time. Obviously there are difficulties in the way of assessment, but seeing the impossibility for many small firms to provide their workers with clubs, playing fields, gymnasia, medical assistance, or other amenities of their own and the great importance, or as I should prefer to say, necessity of giving opportunities for these things to all factory workers, I believe the most practical way of getting them might be by a levy on each industry, the resulting fund being administered by joint committees of employers and employed.

In conclusion I would observe that, as Great Britain led the way in industrial development, so also has she been the pioneer in legislation for the protection of the factory worker and in the exploration of the field of industrial hygiene by individual employers. Progress has been made to such an extent that, in many factories to-day the conditions of life are far healthier than in the homes of the workers themselves. Much, however, yet remains to be done in raising the general standard to that of the more progressive firms, and above all in recognising that the problem of industrial hygiene is not merely physical but extends to the mind as well.

The tendency towards specialisation, mass production, and repetition has introduced a monotony which is only partly counteracted by shorter hours and improved conditions. This Congress has realised the importance of the subject by allotting a section to industrial hygiene, and the interchange of ideas and the comparison of experiences which will be afforded by this gathering will, I hope, take us one step further along the slow and difficult path of progress.

Industrial Efficiency and Fatigue.

By Edgar L. Collis, M.A., M.D., M.R.C.P., M.R.C.S., Mansel Talbot Professor of Preventive Medicine, Welsh National School of Medicine.

(Abstract.)

I.—Discussion of the Problem.

THE introduction of power-driven machinery, which, in the course of 150 years, has entirely transformed the conditions of life, placed in the hands of humanity an instrument for immense good. Nor can we doubt, if a broad view of the results is taken, that great good has been achieved. The expectation of life is greater, and, so far as we can judge, the sum of human health and happiness is proportionately increased. One man with the help of machinery can do more than a hundred not so aided. There ought, then, to be more leisure, more time for rest, less need for activity, less need for work, more comfort, less anxiety. Probably here, too, the balance on the whole is in favour of the new conditions, but, as every social student knows, the arrival of machinery has not been simple, and the old order has not suddenly given place to new without friction and disorder. The machine has proved so wonderful in its power and adaptability that attention has been concentrated upon it to improve it, perfect it, and master its possibilities. Sight has been nearly lost of the fact that mankind, inventor of the machine, has still to direct its action, and that mankind is an even more complicated and delicate machine which requires study in order that the inanimate machine may serve him and not be his master. The prophecy may be ventured upon that in history the nineteenth century will be famous for its study of the machine and the first half of the twentieth century for the study of mankind. But for this new study we have to guide us our knowledge acquired from study of the machine and undoubtedly this knowledge is helping us to understand the human body. The study of mankind in relation to work may be summed up as the study of his efficiency and fatigue.

The human machine.—First, man is a machine, that is, he is a piece of mechanism which can do work; just as inanimate machines differ in construction according to the work they are meant for, so do men. One man can do one thing better than another thing, and nearly everyone possesses the capacity for doing one thing better than anyone else. Men differ in muscular power, in mental capacity, in eye sight, hearing, delicacy of touch, and in a thousand other ways. The first study of man is, then, to discover what he can do. Man also resembles a machine in that you must

first put energy in before you can get work out, just as energy derived from steam, electricity or petrol must be supplied to a machine before it will work. In the case of man the energy is supplied in the form of food, and the more work a man does, the more food he requires. The next study, then, is to discover what kind of food and how much he requires to be able to do certain work.

The problem of efficiency and health.—The problem now is to determine from the point of view of the industrial economist who is concerned with the payment of wages for work done, and who, in the interests of production, desires to obtain a maximum of work per hour and per day, and from that of the health-doctor, who recognises that work is necessary to health, how far activity can be advantageously continued. First, the requirements of the economist may be considered ; they are easier to comprehend as they can be read in output. He wants work to start and to reach a maximum quickly and to maintain that maximum throughout the hours of labour. The human machine, however, takes an appreciable time in warming up to a maximum. This warming up is technically called " practice," and is of great importance in the study of industrial efficiency and fatigue. It is the counterpart of the practice effect already referred to. When the physical effort of work is not too great and the hours of labour are not too long, practice effect continues to increase throughout the period of employment. But if the physical effort is considerable, as, for instance, in wielding a sledge hammer, or feeding a blast furnace, practice quickly gives way to fatigue, and the worker must pause and rest until the fatigue effect has passed off, before he can continue his work. As the day goes on the rest-pauses have to be longer, or his working efficiency is diminished. Again, the more rapidly he strikes with his hammer, the sooner will fatigue weaken the power of the blows. Ordinarily the worker chooses, consciously or unconsciously, a pace suited to the process, just as a runner does not attempt to maintain a hundred-yard pace when embarked upon a three mile race. The economist wishes to know how to maintain a maximum output, not merely hour by hour, and spell by spell, but day by day, and week by week. Measurement of output records has shown when the week-end rest is sufficiently long and working spells and rest-pauses are well adjusted to the process, that practice effect increases hour by hour throughout the day, and day by day throughout the week. During the week-end rest, which is necessary to allow recovery from fatigue, some practice is lost, and Monday starts worse than the last day worked ; this is a natural and inevitable phenomenon. Should the adjustment be bad, then as the week progresses, fatigue overtakes practice on Thursday, Wednesday, or even Tuesday, and the output on these days is less than, instead of being equal

to or greater, than that of the preceding day. At the same time fatigue is also found to be overtaking practice during the day. The hourly output of the afternoon falling short of that of the morning instead of the reverse. Practice should also continue to improve performance from week to week in steady progression, and, indeed, is known to do so, but for how long this may go on has never been determined, but, if the experience of pianists and violinists may be quoted, practice may continue to improve efficiency right through many years.

Now consider the health physician's point of view. He upholds that fatigue, the result of well arranged work, is a healthy phenomenon, necessary to the rhythm of activity and rest ; but he considers that it should not be sufficient to accumulate or carry over from one day to the next, from one week to the next, and that fatigue, which is not got rid of either daily or weekly, accumulates, clogs the activity of the human mechanism, lowers its efficiency, and permits of the establishment of ill-health. By the term ill-health is meant, not definite sickness or illness, not anything which need keep a person from work, but that condition in which the liability to succumb to infection or to sustain an accident, is increased, and which, if long continued, will permanently damage some part or organ of the body. This condition of ill health is all too common and too little recognised. Unfortunately, a person so affected lacks something of the joy of life and of the power for enjoyment. He has no energy left over to enjoy. His interests outside his work diminish, and one sign of the presence of the condition is refusal to take a holiday, refusal to take a rest and recreation. If an output curve could easily be measured in such cases, it would be found falling off instead of mounting up as each week advanced, and as week followed week. Unfortunately output is extremely difficult to measure, and what the physician wants, is some other test. Nevertheless, in repetition processes, particularly if paid by piece-rates, opportunity is afforded for watching for and detecting the appearance of accumulating fatigue. The weekly wages earned by any worker become stationary, then begin to decline. Intensive investigation will now reveal that the best day of the week is no longer the last. The time has come to rest that worker or a breakdown in health will follow. If this sequence of phenomena is observed in a group of workers, the time has come for looking into the work and rearranging it so that it is less fatiguing, or the economist will be faced with industrial unrest and the health-doctor with a rise in the general sickness rate.

The conclusion we arrive at, then, is that the object of both the economist and physician is the same, namely, to obtain a maximum of activity with no accumulation of fatigue. The interests of production and

of health coincide ; but to-day the physician can only carry out his investigations by studying the records of production.

II.—The Maintenance of Efficiency and Health.

The object in view having thus been determined, and the methods for ascertaining how far it is being attained having been decided upon, there remain for review the steps which can be taken to increase efficiency and keep fatigue within the limits of health. These steps fall into two groups ; the first is concerned with fitting the worker to his work, and the second with fitting the work to the worker. Important work waits for the doing in both directions.

Selection of workers.—The first thing to do is to select the worker for the work. Each process should first be grouped according to whether it entails heavy, medium or light physical effort, then sub-divided, according to its demands for acute vision or hearing, for quick movements, for mental concentration, for alertness and the like. The requirements for each process will be indicated by the characteristics of the best workers.

Next, each applicant for work should have his capacities and his disabilities recorded, then he should be drafted to that process for which he is suited. The subject of vocational selection of workers is of great importance, and its neglect to-day is largely responsible for the heavy economic loss associated with labour turnover. A turnover of 100 per cent. per annum is quite common, *i.e.*, to maintain a staff of 1,000 up to strength, 1,000 new workers require to be engaged during every year, while a 400 per cent. turnover is not uncommon. Take the lower estimate of 100 per cent., then place the cost of changing a worker at £2, quite a conservative estimate, when the cost of finding and engaging is added to the cost of training, when found, the inferior productivity during early days of work, spoilt material and disorganisation associated with settling in a new worker. Next recall that in factory work alone there are some eight millions employed ; a simple sum shows that migration of labour, due largely to the present method of trial and error in engagement, costs factory industries not less than £16,000,000 a year. Each change, of course, is at least as expensive to the worker, who earns less wages, until he has acquired experience. Nor does the loss end there. For each worker who leaves, others just stay on, ill-fitted to their work, poor producers, poor earners, striving to be effective against the grain, and in consequence soon fatigued and disgruntled with life. There can be no doubt that with reasonable care labour-turnover can be reduced from 100 per cent. and over to 30 per cent. (it has been done) and even lower ; the full effect on efficiency and fatigue is difficult to estimate. Certain it is that the profit resulting would leave a handsome

balance after carrying expenses entailed in the suggestions which follow for fitting the work to the worker, each of which, in its turn, is a paying proposition. When selected, still the worker is not fitted to start; his clothing must be arranged. The day is by when this is left haphazard to the worker to provide. Different processes entail different exposure to heat, to risk of accident, to dust, to moisture and other things. Working costumes designed to meet varied exposure are required, kept clean and in order. They are as necessary to the worker as oil to the bearings of a machine, and must be provided by those who know what is needed.

Personal hygiene.—A worker will not be fitted to be a good worker unless he can retain his self-respect, and this he cannot do unless he is clean, and when he removes his working clothes, has a chance of removing as well the grime of toil. Facilities for washing and for douche baths are far more necessary for workers than works managers, and good washing accommodation is to be found provided in the offices for most managers. A clean skin is important to general health and to muscular activity, as every athlete knows; it promotes efficiency and postpones tiredness. Minor injuries to a clean skin heal quickly; skin inflammations do not occur.

Ventilation.—A living organism is influenced by its environment, particularly by the atmosphere it lives in, and, if it is to thrive, this atmosphere must be adjusted to its needs. Recent work has established that the influence of temperature, humidity and movement of air are more important than its chemical composition. Ventilation should be contrived to maintain optimum conditions for each process. The means have recently been set out in an excellent Home Office pamphlet; the result in lessened sickness, and increased efficiency outweighs the expense.

Food Supply.—Food is the next requirement to consider, and the value of industrial canteens is now so accepted as to require no further advocacy. Attention should, however, be drawn to the need for studying the energy requirements of each process. Those who do heaviest work want most food, yet the general labourer who does the heaviest work is worst paid. The introduction of labour-saving machinery for subsidiary work is from this point of view important; the less poorly paid heavy labour the better.

The work and the man.—The height and shape of machinery requires far closer study. The employer is too prone to accept what the manufacturer has to sell. The height, position, shape and length of levers and handles are taken for granted, and usually are ill-adapted to the human anatomy. Who, here in Birmingham, can tell me what is the optimum height for the chuck of a lathe? Having ascertained that, how do you plan for each worker to be adjusted to that height? What is the correct height for a work table

or work bench ? Workers vary in body stature, the same height cannot be ideal of all.

Seats call for thought. At sedentary work each worker should have his own, correctly measured as to height, shod with rubber or springs, if there is much floor vibration. Many operations now carried on standing can be provided with high seats, having backs and foot rests, with advance in efficiency, even though they are not in constant use but only provide for a a change of posture. Seats again are needed to permit workers to sit down during waits for material, temporary delays, or necessary rest-pauses.

Lighting.—Illumination is seldom scientifically studied, either for daylight or artificial lighting. Yet apart from the obvious value in enabling work to be done more accurately and expeditiously, light has an important hygienic value. It is death to most infectious micro-organisms, and stimulating to higher forms of life. An excellent way to test the light and atmosphere of a factory is to introduce hardy plants ; they give a pleasant appearance, and the workers readily look after them. Where hardy plants won't survive, human beings cannot be expected to thrive. Windows kept clean—an important point—of size adequate to floor space, working places arranged so that ample light reaches them, good general artificial illumination and well thought out localised lights for each worker, improve health and cheerfulness, lessen accidents, increase efficiency and lessen eye-fatigue.

Lastly, attention is required to the relation of work to rest, to the total hours worked per week, and the arrangement of these hours day by day, to the length of spells of work, and to the use of organised rest-pauses. This subject is placed last deliberately, because, until the work and the worker are fitted one to the other, it cannot be scientifically studied. The optimum hours for work under good conditions will not be right for the same work under adverse conditions or performed by workers not suited to it. First, get the conditions of work and workers right, then study hours of labour. The study will repay consideration. Reduction of hours does not necessarily mean reduction of output. Indeed, it causes a steady rise in hourly output in direct proportion to the extent that the worker and not the machine, controls the pace ; the rise is often enough to give a total daily increase. While there is always as an offset reduction in overhead costs. The modern tendency ought to be to work machinery as long as possible, and keep workers as fresh as possible ; to work out the machine while it is up-to-date, then scrap it. Workers, on the other hand, improve with service and should be preserved carefully. Lord Leverhulme has crystallised the object in the phrase, " sweat the machine, not the worker." This end may be attained by multiple shifts of workers, and legislation just

introduced will permit two eight-hour shifts a day for women and young persons.

When the hours are settled, the value of rest-pauses must be studied. Many cases have now been published where greater output with less exertion has been obtained by interpolating compulsory rest-pauses; rest-pauses require to be planned so that rest adequately balances exertion. Roughly put, the heavier the physical effort, the shorter should be the spell of work and the longer the rest-pause. An instance may illustrate the idea:—Two officers during the war, with equal squads of men, competed against one another in trench digging. One officer set all his men to dig to their best ability; the other only put in one-third of his squad and allowed them to dig for only five minutes, then he put in another third to dig for five minutes, and finally the last third for five minutes, after which the first third who had now rested ten minutes, were put in again. Five minutes of work, and ten minutes' rest, and only one-third digging at any time. This method won easily. Yet the unscientific employer of labour would say he was paying the men for doing nothing for two-thirds of their time. Now that is just what must be done with the living machine. The instance quoted is, of course, an example of heavy physical work; for light work, the period of activity will much exceed the period of rest; in every case the right distribution of work and rest must be the subject of careful experiment. The Health of Munition Workers' Committee in their Interim Report suggest a rest-pause whenever a definite task is completed, so that the quicker the the task is done, the more pauses are earned in the day, and payment for the pauses on an increasing scale—an interesting proposal which introduces psychological incentive into monotonous processes.

III.—Conclusion.

A right understanding of and attention to the human machine, its possibilities and reactions, its medical and psychological aspects, will increase well-being and contentment, increase efficiency and production, decrease chronic fatigue and discontent, and with them inefficiency and poverty.

Health and Welfare in the Factory and its Meaning for the Community.

By Miss A. M. Anderson, H.M. Principal Lady Inspector of Factories, Home Office.

"THERE is nothing you cannot ask and expect of the British worker, man or woman—they have ability for anything" said an employer to me, who was convalescent from severe illness, due to overwork throughout the war in his own Foundry.

The self-forgetful energy of production for the safety of the nation and the welfare of humanity suddenly brought together, into a co-ordinated movement for betterment of the personal life of the industrial worker, all sorts of isolated ideas experiments and efforts, that had been fitfully appearing ever since the early part of the 19th century in England and France.

Constructive means of personal welfare and health of the individual worker, in the power-driven factory, have been variously attempted by many employers for years past; and the British nation in the Factory Acts, consolidated in 1901, laid the broad foundation for them in general rules for healthy and safe construction of the workplace, limitation of hours, pauses for meals and rest, and special regulations under medical guidance for prevention of the most obvious occupational diseases. Contributory to this foundation was the contemporary law relating to Public Health.

Only after the Great War was it generally realised how largely the personal welfare and health of manual labourers rests on their own co-operation, in understanding demand for and use of all the new means placed by development of science and advancing humanitarian and Christian ideals at the disposal of Industry, and how important it is to have trained, technical assistance in developing the full use of all these means in each workplace.

Food of the right kind and quantity at the right time, taken in proper surroundings, access to adequate washing appliances, rest and suitable recreation, these obviously alone, generally applied, could enable the workers to put forth the necessary sustained energy of such production as that of 1914 to 1918.

Exceptional stress, with exceptional migration and concentration of labour, led to all kinds of hastily devised means and agencies for securing these indispensable things. The need of going further, of increasing, if possible, the power of the normal worker to produce, of also adapting substituted, untrained and above all women's labour led to freshly concentrated application of scientific research as well as to exceptional social steps.

These gave us the Health of Munition Workers' Committee and all its studies, the more permanent Industrial Fatigue Research Board, the tem-

porary Central Control Board (Liquor Traffic), the Hostels and Welfare Departments of the Ministry of Munitions and the Billetting Board, also permanent new powers to the Factory Department, Home Office, through the Act of 1916, to make, by Order of the Secretary of State, provisions for securing the welfare of workers or any class of them in any particular factory or workshop or for factories of any class, group or description. The subjects of welfare were provisionally enumerated as :— Arrangements for preparing and heating and taking meals, supply of drinking water, supply of protective clothing, ambulance and first aid arrangements, supply and use of seats in workrooms, facilities for washing, accommodation for clothing, arrangements for supervision. Power was also taken to add to this list and it has been supplemented by the special Order, adding provision of restrooms as a subject of welfare. The Welfare Orders already number 12, and preparation is being made, by official issue of all kinds of informing pamphlets on various aspects of welfare, for a far wider extension of means of health and welfare.

In fact, a new Science and Art of Labour is coming to light. And the psychological, psychophysical and physiological researches, into the capacity and limitations of the human motor, of nearly a generation of European thinkers now come into view in their highly practical bearings, with power to meet and reconcile the aims of the efficiency Engineer with his applications of " motion-study," the employer desiring the happiness as well as the production of his employed workers, and the workers seeking self-determination in the workplace.

Much must depend in method of securing health and welfare in the workplace on what are the general aims and kind of production, on whether the aim of quantity predominates, or whether the chief aim is to produce such an output in quantity and quality as will secure both general fitness in mind and body of the worker and the interest of the whole community in best production. No external means or conditions can ever replace the life and health-giving power of happiness in work itself for the worker, or what William Morris glowingly described under the name of his " fearless work and hopeful rest." * It may be assumed, however, in face of such new signs as the opening, under the joint ægis of the Boards of Trade and Education, of the British Institute of Industrial Art, for the encouragement of sound craft, quality and design in manufacture, the newer work of the Trade Boards in joint determination by employers and workers in the less organised industries of various conditions of work and wages, the means by Joint Industrial Councils of better self government for trades where organisation has been achieved, that the initiative, ideas and demands of the manual workers are going to have new scope and channels of great effect.

*See " Architecture, Industry and Wealth," pages 78-79.

A skilled workman in a large factory where there is much high grade craft work, president of his Union and taking a leading part in the Joint Works' Committee and District Council, expressed to me the belief that they had within reach, if they could only see it, the power of achieving in co-operation with the Employers, no less than the re-creation of their work and surroundings.

The new position of Labour under the Peace Treaty, and Labour conventions and conferences following it, giving an integral part for the League of Nations to play in working out international social welfare standards for industrial life, gives a pledge that we have passed out of the stage where each country set up its own isolated standards of factory health and welfare. It gives hope that we shall avoid the past hindrances to advances in any country through subjection to the risks from prevalence of low standards in a neighbouring country. It reminds one of the saying attributed to Hippocrates in the Vth century B.C., that the art of healing is identical with the "love of man." The welfare of industrial workers is now openly acknowledged, in a way that cannot be misunderstood or pushed aside, to be no small part, owing to the many millions concerned, of the welfare of humanity.

The immense change in the field of vision, involving many communities besides our own, gives new meaning and interest to every practical detail for health, welfare and safety, every living experiment being made, whether by employers or employed workers, by the State or scientific workers, by civic or voluntary associations. All these agents, individually, and in co-operative action, are on the whole needed to work out in a truly healthful way the complex many-sided elements of welfare in industrial life and production.

In old, staple, and highly organised industries, fundamental to the whole economic life of the Commonwealth, *e.g.*, cotton and woollen textiles, engineering, little seems ordinarily needed beyond on the one hand incursions of welfare Orders of the Secretary of State, on the other, joint action of the associated employers and workers. The State would break in on lethargic inherited customs of the trade, throwing by expert Inspectors new light on the gain of skilled management, of ambulance and first aid, of canteens and rest rooms, the most hygienic methods of supplying drinking water and organising cloakrooms and washing conveniences, good forms of protective clothing where needed. The employers and workers separately and jointly are beginning to find out the value of (and themselves push forward) skilled supervision and management of welfare measures in the factory. Other additional advantages, such as clubs, recreation and certain facilities for education, special hospitals and convalescent and holiday homes which "could not reasonably be required to be provided by the employer alone" have been in some instances voluntarily promoted by action and contributions of the workers.

In other industries, for example, the migratory fish-curing industry, for which localised plant and buildings cannot be steadily in occupation and use throughout any extensive period of the year, and in which both workers and employers follow the material of the industry round the coast, highly special requirements for suitable welfare arrangements are needed. The workers are less able to help in promoting requisite conditions and are peculiarly dependent on local voluntary and civic arrangements for lodging or housing, transport and special canteen, rest room and first aid organisation.

In industries, again, where materials or conditions of manufacture are liable to affect health adversely, or cause excessive fatigue, far greater importance attaches to professional and technical or scientific knowledge and understanding of the kind of welfare provisions likely to be most valuable. This appears in Orders with regard to ambulance and first aid in industries most liable to accident. In a highly special industry under elaborate special regulations for dangerous processes such as Potteries, however, where joint organisation of employers and workers had already grown up in conference with agents of the State, and self-inspection was given a prominent place before the Act of 1916, there are great possibilities of development of good welfare within the industry itself.

In trades where a high proportion of the workers are young persons, boys or girls, much more, naturally, has to be done by employers individually and collectively, under guidance or stimulation from the State and through special welfare trained management than by any primary initiative from the side of organised labour. Much has been done in many large works by excellent games and club organisation for boy-welfare, sometimes under ex-army officers.

For men and women workers alike, now in industry, a large measure of the growing amenities and humanisation of their conditions must be attributed to the substitution of women for men, in both munitions and non-munitions factories during the war. The novelty and the risks of their rapid, large-scale introduction, in workplaces where they had never before been thought of, led to willing co-operation of employers in hurrying on of fatigue prevention and labour-saving experiments, arrangements for proper feeding, washing, cloakroom and other personal welfare provisions, under some kind of technical supervision. The success in great measure of their work led, on their departure, to their leaving behind them a fruitful tradition as regards the value of welfare work.

The employers are far more widely expecting and demanding trained welfare workers to help them in carrying out their new schemes for improved social conditions, and it is common, specially amongst the younger men returned from the war, to both speak of conditions directly conducive to

the personal health and welfare of the workers as a foremost consideration in management, and also to treat such management as a matter for a specially trained supervisor.

In a factory in Scotland where a Workers' Council had secured from the management a five-day week and an annual holiday with pay, of 14 days, excellent rest rooms with lending library and good educational facilities, the restaurant was staffed in turn by the workers. There, the experienced Welfare Supervisor, already a graduate in Arts, is studying for her Science degree while she carries on her work in the factory.

In a south country factory, where the main standards of factory hygiene were exceedingly well developed and special appliances for the newer welfare arrangements excellent, the well-trained Welfare Supervisor seemed to combine secretaryship service to all the many-sided workers' Committees with considerable responsibility for guiding the employer in carrying out general organisation of the factory. The arrangements for receiving and dealing with suggestions from workers for improving both factory methods and social arrangements seemed to be very democratic and successful, and altogether one could not but be impressed with the community feeling of the place.

In a Lancashire warehouse where a Library Committee came into being three years ago, particularly for the benefit of numerous employees attending continuation classes at the cost of the firm, the Works' Committee was composed of the head buyer and heads of various sections. They reported to the firm the need of a welfare supervisor for the girls and the reply was they might select her, which they did. She became responsible to this committee, receives her directions from and reports to them, dealing with welfare of boys and men as well as of the girls.

In the wide variety of experiments being made already, nothing strikes one as more hopeful for the future than the spontaneous adaptation to the special needs of each workplace of the general idea of social welfare, particularly through democratic Works' Committees. The keynote of "service" has been firmly struck in many cases with much more than a simple echo of the duty-to-serve spirit of 1914-1918.

In the civic recreation councils such as those of Birmingham and Leicester, the Joint Universities Council for Social Studies and Welfare Training, the Board for Religious Training of Social Workers which unites all denominations, the various University diploma courses, the Welfare Workers' Institute, the Industrial Welfare Society, the Safety-First campaign, the work of all kinds of club organisations, not to speak of the long continued work of the Trade Unions, we can see voluntary help forthcoming in many and varied manifestations. Without such share of the community in it, of a living kind, the welfare movement could never endure and come to its full effect.

Welfare Work in Industry.

By Miss E. B. Voysey, B.A., General Secretary, Welfare Workers' Institute, Great Britain.

IN dealing with any question of national importance, whether of health, morals, individual development, or any other, it is obviously essential to take into account those conditions under which is spent the greater part of the waking life of the people, viz., the industrial conditions of the country. No one can deny that in the past there has been a lamentable lack of responsibility on the part of the organisers of industry, towards the manhood and womanhood of the nation.

There is, however, the development of a new spirit in industry by which the human needs of a factory are receiving greater consideration. It is now beginning to be recognised that the management of industry is no longer chiefly concerned with the technical side of the business, as hitherto, but with the human element also.

Even if we regard the workers as part of the machinery of industry only we must, as a nation, plead guilty to extraordinary blindness and stupidity in the way in which we have allowed the workers to waste their energy, to have it inadequately renewed by unwholesome and insufficient food and rest, and to work for too long hours under uncomfortable and insanitary conditions. No one in their senses would expect good results from machinery treated in this way, and yet the most delicate and complicated of all motors—the human motor—has been allowed to suffer the most serious neglect.

If the problems of the human element in industry were only the study of how to make the workers into a more efficient part of the machinery of industry, it would be comparatively simple. But no one will deny the justice of the worker's claim for recognition as an individual with an existence distinct and separate from his function as a producer, and it is this dual capacity of the worker—as both individual and producer—which makes the study of the human element in industry so complicated.

As a matter of fact this study is becoming a matter of primary importance as the fact of the Welfare movement shows. This movement started from all sorts of angles and under all kinds of conditions, but in every case where it has been seriously undertaken it has converged towards this central point and is at last taking its place as one of the primary functions of management. This view of the Welfare movement makes its voluntary undertaking on the part of employers (or those

responsible for the organisation of industry) a matter of prime necessity A Welfare Worker imposed on the firm by an outside authority might raise the level of material conditions, but the essence of the movement would be left out, this being the voluntary recognition on the part of the employer of the need to make a special study of the human factor.

This view of Welfare Work also makes it quite clear that it is a principle in industry equally applicable to all the persons engaged therein—men, women, boys and girls—and not to any particular section.

Having decided that Welfare Work is an integral part of factory organisation, it will depend on the size of the firm as to whether a special Welfare Officer need be appointed. In any case, it is absolutely essential that the spirit of Welfare should be carried out by the whole firm, the Welfare Worker only acting as the organiser and co-ordinator throughout.

Where a business concern is large enough to warrant the special appointment of a Welfare Worker, the careful selection of the right person fully equipped to organise this difficult work is a matter of extreme importance.

The duties of such a person will be determined by what concerns the *personnel* of the factory.

Thus he must obviously be responsible for the selection of the *personnel* in the first instance, establishing at the outset that personal and individual relationship so necessary for the success of the work. Having satisfied himself of the suitability of the various candidates as individuals, for the work in question, the Welfare Worker passes them on to the technical expert (manager or foreman as the case may be) for completion of the engagement. From this the following up, transfers (if necessary) and keeping of personal records will naturally follow. The question of discipline—obviously an important matter to the individual—will be dealt with through those already in authority, it being the business of the Welfare Worker to see that the system is a good one and applied uniformly and with strict impartiality.

With regard to wages the Welfare Worker must see that at least a living wage is paid to all, and that the system is not likely to lead to overstrain. Even among organised workers, where rates are fixed jointly, there are bound to be a number of individual adjustments to be made, while there will always be the sub-normal to look after.

Consideration of the health of the worker and working conditions generally necessarily form an important part of the duties of a Welfare Worker. Much valuable information can be obtained by keeping careful records on such matters as reasons for absence, first-aid treatment, etc., etc., whereby the healthiness (or otherwise) of a certain kind of employment may be recorded or the incidence of accidents may be indicated.

It is obviously the concern of the Welfare Worker to see that all working conditions are as favourable as possible—this being the irreducible minimum on which Welfare Work must be based. This will include such matters as the heating, lighting, ventilation and sanitation of the factory, and the arrangement of the work on hygienic lines, provision of suitable seating accommodation, where possible, and provision of rest and waiting rooms where necessary. Length of hours, frequency of breaks, provision of first aid equipment, guarding of machinery and provision of protective clothing, all form part of the duties of a Welfare Worker. Although Welfare Work originated chiefly through employers taking an interest in the social, educational and recreational life of the people, it has developed, as already already shown, far beyond this. In fact, the success of Welfare Work nowadays may almost be reckoned in inverse ratio to the amount of managerial initiative and direct control held over these matters. The activities will be there and greatly in evidence, but will be almost entirely self-governing. There will not, therefore, be much danger of such activities becoming unsound because of undue centralisation of the interests of the workers round the factory.

Having briefly enumerated the main duties of the Welfare Worker, we must pass on to the all-important consideration of the *way* in which these duties will be carried out. It is common knowledge that only by doing things for oneself is there any hope of real development, and therefore the establishment of committees whereby the workers can take their share in the control of the conditions under which they work, is a necessary and important part of Welfare Work. Further, if the individuality of the worker is to receive effective recognition, it is essential that he be given some share in the control of industry. He is thereby at once lifted from the position of a mere cog in the machine of industry to take his place in its guidance and control. In this connection the establishment of Works Committees is one of the most hopeful signs of the times. Both management and workers are represented on this Committee, to which the Welfare Worker usually acts as the executive officer, carrying into effect the decisions made by it. These Committees give an opportunity for some plain talking, which will do more to clear the air in a few minutes than would months of negotiations on the old basis. The constructive powers of all concerned are being drawn upon, the brains of the workers being utilised as well as those of the management, with corresponding advantage to the organisation of the factory and ultimately to production and industry generally. Its educational value is enormous, each side being given an opportunity of hearing and realising the point of view of the other. The employer can explain his policy and get the criticisms of those most directly concerned, before it is too late

to profit by them. Incidentally, too, he is bound to have the co-operation of all concerned for the various projects submitted to and passed by this joint Committee. From the Workers' point of view it is an insight into what is meant by control of industry and gives them some idea of the difficulties involved. Also in no other way is the fact so forcibly brought home that employer and employed are really co-producers as when they are seated round the same table discussing their joint problems.

That there is a great future for Welfare Work carried out on these lines no one can doubt, but if it is to do anything at all towards the solution of the problems indicated it must be undertaken in the right spirit and with knowledge and understanding of all that it involves.

Practically every one is connected with industry in some form or other, and, as I have already said, most of our waking time is spent in its service. Our industrial conditions, therefore, will very largely determine the standard of our national life.

But even more important than this at the present moment is the real significance of the economic and industrial outlook of to-day. Events are clearly showing the rapid approach of a crisis. The issue already seems to be narrowing down to the alternatives of ultimate fusion of the classes or their violent disruption. It is very largely in the hands of those who have some part in the control of industry to decide which of these shall materialise. Surely the hope of the future lies in evolution from within rather than in revolution from without.

Welfare Records and their Inference.

By William B. Welch, Welfare Supervisor, B.S.A. Co., Ltd., Birmingham.

WELFARE Work is the application within a limited part of the community of methods which the Congress would approve if applied to the whole.

Some phases of welfare work are supplemental to State requirements, others are due to a belief that things necessary or desirable for the general community do not become less necessary or desirable when applied to a restricted portion.

It should, therefore, be of interest to the Congress, if the results of the application of such limited community service were recorded. Comparisons could then be made and it might be possible to estimate the advantages likely to accrue to the community by the extension of this limited community service.

With this object in view, I have, with the consent of the management, drawn upon the welfare records of The Birmingham Small Arms Co., Ltd., of Birmingham and Redditch, and in submitting them to the Congress, desire it to be understood that no special merit is claimed for the Company's welfare scheme. The advantage of the scheme for purposes of comparison lies in the fact that there is no measure of complusion, every employee being free to accept or reject items calling for his monetary support.

The B.S.A. Co's. welfare scheme at Birmingham and Redditch, includes :—

Juvenile Welfare Work.	Surgeries.
Apprentice Training.	Recreation and
Canteens.	Social sections.
Dental Surgery.	

The factories in Birmingham consist of a central factory, with two branch factories some fifteen minutes' walk from the central factory. The fourth factory is at Redditch. Many of the workers live in the vicinity of the factories and the same class of worker is employed at all the factories.

The numbers employed may be stated as "in the neighbourhood of 10,000."

On entering the Company's service, junior employees are interviewed as soon as possible after their medical examination and facts recorded :—

Medical Records of Boys :—

58% examined are considered satisfactory.
20% require dental treatment.
13% ,, treatment for malnutrition.
4% are recommended for "light work only."
5% require eye, ear or gymnastic treatment.

Young people not liable to medical examination are also interviewed, and any adverse health fact ascertained.

Employment.—Where state of health is likely to be affected by employment the employment department is notified and arranges for transfer to more suitable occupation as soon as possible.

Thirty-three per cent. of our boys have near relations in the works—these take a more active part in welfare organisations than other boys.

(The inference is that our older employees are not uninterested in our welfare work amongst lads and encourage them to participate).

The records show that one-third of the boys have been attached to a definite (*i.e.*, all the year round) B.S.A. welfare organisation, and that of the remaining two-thirds less than one boy in six is under the influence of any Boys' Organisation.

(The rule here is that a boy in an outside organisation is not to be pursuaded into a work's organisation. When a boy lives outside our radius, he is advised to join a suitable local organisation.)

It is clear that all boys recruited into works organisations are supplementary to those recruited by the general community. The value of welfare work from the national point of view thus becomes apparent.

Medical and Dental.—The medical record, supplemented as it is by interview, is augmented by treatment at the surgeries, etc. Nearly all malnutrition cases follow advice and receive free treatment at the works, and about half the dental cases go to the work's dentist for advice, although, as this service is charged for, they do not always elect to go to him for treatment.

Gymnasium.—The percentages of girls and boys using the Company's Gymnasium are 15 per cent. and 12½ per cent. respectively. In the case of the girls, the Gymnasium is rather a new departure, hence the difference in percentage.

Physical Records.—Our Apprenticeship system at one time imposed a compulsory attendance at the Gymnasium. Physical records of these

Apprentices, nearly all of whom were drawn from boys in the Company's employ, show :—

(*Apprentices.*)—

Average age	...	16.	Average age	...	18.
,, height	...	5 ft. 2¼ in.	,, height	...	5 ft. 8 in.
,, weight	...	7 st. 4½ lbs.	,, weight	...	9 st.
,, chest	...	31¼ ins.	,, chest	...	34¼ ins.

Apprentices have the advantage of two half days at school, but, making every allowance for this, the value of physical training is evident when compared with non-apprentice boys of corresponding social standard.

(*Non-Apprentices*).—

Average age ...	14–15	15–16	16–17	17–18
,, height	4 ft. 9½ in.	5 ft. 0 in.	5 ft. 2 in.	5 ft. 4½ in.
,, weight	5 st. 8½ lb.	6 st. 5 lb.	6 st. 10½ lb.	8 st.
,, chest	29 ins.	30 ins.	31 ins.	33 ins.

Continuity of Employment.—Betterment of conditions is generally understood to make for continuous employment. An enquiry into the leaving records of boys in three of our factories tends to substantiate this :—

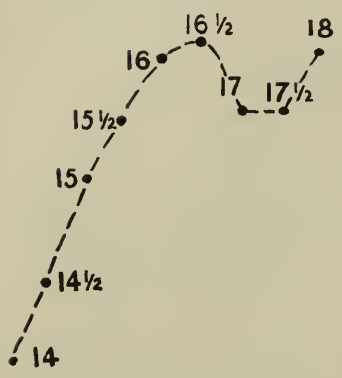
In Factory 1—boys stopped 67·578 units of time.
,, 2— ,, 21·341 ,, ,,
,, 3— ,, 11·081 ,, ,,

This corresponds to some degree with the amount of welfare work carried on in the respective factories, the low figure in Factory 3 being accountable for because the factory is a new one and the welfare system is in consequence not yet fully developed.

Leaving ratio among boys.—The following was the leaving ratio of the same boys (numbering in all about 1,000) :—

Boys leaving at age		14	stopped	·830	units of time.	
,,	,,	14½	,,	4·149	,,	,,
,,	,,	15	,,	9·543	,,	,,
,,	,,	15½	,,	12·034	,,	,,
,,	,,	16	,,	15·767	,,	,,
,,	,,	16½	,,	16·182	,,	,,
,,	,,	17	,,	12·864	,,	,,
,,	,,	17½	,,	12·864	,,	,,
,,	,,	18	,,	15·767	,,	,,

This leaving ratio is shown on sketch.



The upward curve to age 16½ is of interest. The decline at age 17 followed later by upward trend is due to difference in wages at age 17½ and 18. The duration of stay at age 14 suggests that some co-operation is necessary between after-care and welfare workers.

One other point of interest in connection with these leaving records is the proof they afford that boys within definite (all-the-year-round) organisations stopped very much longer than boys not so influenced.

Canteens.—Modern, well-equipped Canteens provide accommodation for about 60 per cent. of our workpeople. It is not possible to state the precise percentage of the numbers who need to use the Canteens because many of our people live within easy distances of the works, and not unnaturally prefer to go home to meals, but it is permissible to say that the majority of the workers to whom canteens are likely to be of service make regular use of them, about one in five bringing their own meals.

The Canteens are self-supporting and it is noticeable that during the dinner time the streets adjacent to the factories are deserted, which was not the case before the Canteens came to be in use generally.

Apart from meal times, the Canteen service provides a travelling trolley service through the shops at times likely to be associated with periods of fatigue.

The Canteens are used for workers' social affairs, the accommodation being more suitable than that available in local halls, etc.

Surgeries.—Our workpeople nearly always make use of the surgeries in cases of accident, for although, in accordance with the law, first aid boxes are in all the shops, their use is becoming negligible because they are not so effective in preventing wounds from becoming septic.

The Surgeries result in a saving of health and the loss caused by time spent in Surgeries is trifling compared with the gain resulting from immediate and skilled treatment, but for which many employees would undoubtedly be absent from work for long periods. As it is, only ·433 are sent home " off work " after Surgery treatment.

Careful record is kept of all cases, most of which are of a minor character. From these and other records, the relative health and accident conditions in our various shops are ascertained.

Averages of new cases in the Surgerics :—

Surgical ... ... 11½% Medical ... 10%,

nearly all entailing a number of revisits.

Recreation.—From 10 to 12½ per cent. of our employees are active Members of our Recreation Association, subscription to which is on a voluntary basis. The principal organisations represented are :—

Scouts (appealing to about 25% of our boys).
Gymnasium ,, ,, 12½% ,, ,,
Football ,, ,, 15% ,, ,,
Swimming ,, ,, 10% ,, ,,
Cricket ,, ,, 6% ,, ,,

Angling Societies, Football, Cricket, Tennis, Cycling, Hockey and Rifle Clubs, together with Military Band, Male Voice Choir, and Orchestra, also have the support of the older members of the Recreation Association.

Social.—About 7½ per cent. of our employees take part in Whist Drives, 10 per cent. in Dances, all held at regular intervals at the factories.

Cost.—Since welfare work is community service, it would hardly be fair to assess it altogether in terms of £ s. d. At the same time much of the expenditure can be justified by the application of Dr. Collis' method of calculating and comparing cost of re-engagements. Generally, expenditure will be held to be recoverable, if the value of corresponding services to the whole community be taken into consideration.

Observations on the Physique and Working Capacity of the Liverpool Dock Labourer.

By Dr. William Allen Daley, M.D., B.Sc.Lond., B.A., R.U.I., D.P.H., Medical Officer of Health, Bootle.

(Abstract.)

THERE is need for an intensive study of the effect upon the Health of the workers of all the principal occupations of the country, if progress is to be made in ameliorating industrial conditions and so improving the health of the community. So far as is known this is the first analysis of data relating to the physical condition of Dock Labourers and is based upon records extending over four years concerning some 2,500 men, all Dock Labourers of one or more years' standing, enlisted in the Dock Battalions of "The King's" (Liverpool Regiment); particulars are also given of those who applied for admission and were rejected on the ground of disability.

The records show that some 17 per cent. of the applicants were rejected and about 3 per cent. per annum of the enlisted were discharged as unfit to do the full work of the Battalion, but, taking the Battalion as a whole, the effective working strength was during the calender years 1916, 1917 and 1918, 93·77 per cent., 94·2 per cent. and 94·65 per cent., the remainder including the sick, the injured, and the absent without leave. The average number absent through injury was 7·7 per 1,000 and through sickness 43·7. The detrimental effect of overtime on the number at work is shown.

Certain social questions incidental to casual labour and the need, as a public health measure, of decasualising it, are referred to.

The Health of Seamen and how to Safeguard it.

By Surgeon-Commander R. J. MacKeown, O.B.E., M.B., D.P.H., Royal Navy, Naval Health Officer, Portsmouth Command.

(Précis).

THE sailor has placed on us a debt which the Empire acknowledges, but can only repay to a limited extent.

I hope to bring to your notice some measures by which we can make a substantial uplifting of the well-being of sailors in the days that are to come.

I do not limit my remarks to the British sailor, but wish to include all seamen, Royal Naval and Merchant Seamen of all countries.

2. The causes of *Dysentery* are now known and the disease has been abolished from ships by giving the crews a wholesome water distilled on board or obtained from a reputable source on shore.

3. *Scurvy* is a disease with a long period of development, from four to eight months on a defective diet before it shows.

4. The toll of disease in Anson's voyage around the world was so great that, " while in all, eight ships sailed from St. Helen's Bay, Isle of Wight, in September, 1740, manned by 2,030 officers and men, only one ship returned in July, 1744, and three out of every four men had died of disease." Little wonder need be expressed at the difficulties experienced in manning fleets when the death-rate was so enormous.

5. Judge of the pleasant surprise it was to a much harrassed First Lord of the Admiralty on receiving a letter in 1775, 31 years later after Anson's return, as follows : " I have been three years and eighteen days at sea in all climates from 52° North to 71° South with the loss of one man by disease, who died of a complicated disease that was not Scurvy, two were drowned and one killed by a fall, a total loss of four men out of a crew of about 120." The writer of this letter was the immortal James Cook, the Navigator.

6. The so-called lime juice was gradually introduced into the Navy. It was first issued in 1795, but was not general until August, 1804, when sugar was issued with it.

The fruit was obtained from Spain, Sicily, and Malta, and consisted of lemons and sweet lime ; the juice obtained from these fruits reduced the scurvy in the Navy so that by 1813 the sickness and death rate came down very considerably.

It continued in the Merchant Service, but the number of cases dropped at once, when, in 1867, the lime juice ration was doubled by Act of Parliament.

The West Indian sour lime became the source of the lime juice ration in the Royal Navy and Merchant Service between 1850 to 1860. It is considered to be of less anti-scorbutic value than the sweet lime of Sicily.

Recent investigations show that *Scurvy* is a deficiency disease caused by absence in diet of an unknown accessory food factor or vitamine. This factor is present in living vegetable and animal tissues—in largest amount in fresh fruit and green vegetables.

The fresh juices of oranges and lemons were found to be the most potent anti-scorbutic of all the materials examined.

Fresh lemon juice being more potent than fresh lime juice as 4 to 1.

The preserved lime juice as now issued in the Royal Navy was found

to be useless for the prevention of scurvy by the method employed. A trial is to be given to the dried fresh lemon juice tabloids with bicarbonate of soda and water added prepared by Professor Bassett-Smith, R.N. College, Greenwich. We hope that the results of investigations now being made will produce an effective anti-scorbutic fruit juice for the use of seamen.

Much remains to be accomplished to give seamen the benefits of modern enlightenment, and I will now indicate on what lines this may be carried out.

The house the sailor lives in, called the crew's quarters, is in most ships situated under the forecastles in the bows of the ships. This position is objectionable as it is the part most exposed to strain, stress of weather, danger through collision, and ventilation practically ceases in bad weather.

The Merchant Shipping Act of 1906 provides for 120 cubic feet and 15 superficial feet per man. In the Navy, the standard we are aiming at is 200 cubic feet and, in addition, to deliver 3,000 cubic feet of fresh air per hour per man, taken in from or above the upper deck and warmed if necessary.

A separate messroom and an ablution room should be provided, to be situated in deck houses or under the poop at the after end of the ship. The separate sleeping quarters should consist of cubicles, each fitted with two collapsible and rustless iron bunks 6½ feet long and 2 feet 3 inches wide, placed two feet above the deck and the same distance above each other.

Ventilation should be ample, utilising natural means where practicable and direct approach to these should be preserved to enable them to be shut or opened with ease.

Traversing or electric table fans should be fitted on bulkheads and so adjusted that they can be placed at different angles. They would keep the air in circulation and lessen the fly and mosquito danger. In large ships mechanical supply of air should take place in all living places beneath the level of the upper deck. A suitable installation would be the fan known as the "Sirocco" with metal trunking. The openings in the trunking for the escape of the air must be protected by adjustable flaps to prevent draughts.

Lighting is most important—to be natural when possible and supplemented by shaded electric lights—all lights to be opaque. The interior of living spaces to be painted white.

Ablution Rooms, fitted with enamelled metal hand basins and shower baths, provided with a hot water supply for all members of the crew.

A Drying Room is necessary, and water closets to be in single compartments and constructed of enamelled iron pedestal pans. Trough closets to be abolished.

Accommodation for the sick and injured to be provided to separate them from the remainder of the crew.

THE DISEASES TO BE PREVENTED AND THE MEANS TO BE EMPLOYED.

Tuberculosis by increased air space, sufficient ventilation and the detection of early cases.

Dysentery, Enteric, Paratyphoid A and B, and Cholera. A wholesome water supply by distillation or from a reputable shore source ; a rigorous scrutiny of all water tanks and water lighters. The tanks to be cleaned under medical supervision and the cleaning party to be examined to exclude the Enteric and Dysenteric carriers

Inoculation by the triple Enteric vaccine and sterilization of water by the addition of bleaching powder, a few grains per ton. This is a simple and effective method and has been carried out in the Royal Navy for years with success.

Smallpox to be prevented by vaccination and re-vaccination, and if the reaction is at all severe, men should be placed on the sick list until their arms are quite better.

Malaria can be greatly lessened by the fitting of phosphor bronze wire netting of a mesh 16 by 16 per inch to doors, panels, ports, etc., and by anchoring a ship before sunset about one mile from the land.

Venereal Diseases. Health lectures to be given to the officers and crews to teach them the dangers of these diseases and how to avoid them. Opportunities to be given to all who have exposed themselves to have a thorough lavage of the genital organs with hot water, soap and a disinfectant immediately on return to the ship ; to provide gratis on board, if asked for, a small bottle of potassium permanganate, strength 1 in 1,000. to be taken on shore and to be used immediately after connection.

Rats and Plague. All known means should be used to prevent rats getting on board. If the rat population is numerous on arrival at a Home Port, the ship to be fumigated throughout, all at the same time, after the cargo has been discharged, by sulphurous acid gas, generated by the Clayton Apparatus for the holds, and by sulphur candles or sulphume (liquid SO_2) for cabins, living spaces and all deck houses.

All sailors should be medically examined before proceeding on a voyage and to have an eyesight test carried out yearly.

I would appeal to the Congress to use its influence :—

(1) To create an international standard of accommodation on board ships for seamen, by representations to the Board of Trade, Ministry of Health, Admiralties, and the Council of the League of Nations, and

(2) To establish legislation that all plans of ships proposed to be built must be submitted to a Central Authority in each nation, showing the accommodation provided for the crew, and the work is not to be proceeded with until approval has been given and to be followed up by inspection during construction.

Some aspects of the Housing Question—The ideal standard for a healthy home and the actual standard, dictated by the fact that we are not building houses to accommodate the natural increase of the population.

By H. Scurfield, Medical Officer of Health, Sheffield, M.D., C.M., D.P.H., M.O.H., Sheffield (Fellow).

Read at Doncaster Sessional Meeting, September 15th, 1920.

DURING the war a wide-spread feeling that we must have a better England sprang up and still exists. Every family was to have a home worthy of the name—well lighted and well ventilated rooms —no overcrowding—a living room that one could read in—a sink with hot and cold water—facilities for washing and drying clothes—a food pantry with direct ventilation—a bathroom—a water-closet and bin for house refuse, etc.

In Sheffield it has been estimated that about 20,000 houses, mostly "back-to-backs," are in need of condemnation, and the City Council consider that 15,000 houses should be built by them during the next five years.

The return issued by the Ministry of Health shows that 2,295 houses (or about enough for Sheffield) have been completed under housing schemes up to July 31st, 1920, in the whole country.

The same return shows that there are 30,618 houses in hand, but even this number is totally inadequate to meet the needs of the situation.

Sheffield Corporation, in spite of a strike, is comparatively speaking well to the fore, and has completed 206 houses up to October 7th, 1920, and has other 606 in hand.

The total new houses certified by the Building Surveyor from November 1st, 1918, to October 11th, 1920, was 239.

During the year 1919 there were 4,947 marriages in Sheffield, and the excess of births over deaths during the year ended September 30th, 1920, was 7,264.

We are, therefore, nowhere near the provision of houses to accommodate the natural increase of the population.

There is a huge waiting list of urgent applications for each house as it is finished, and overcrowding grows worse week by week.

Hovels condemned before the war have to be reoccupied and no standard of "fitness for habitation" can be laid down.

I believe most towns are in the same plight. Dr. Robertson tells me Birmingham is in the same case as Sheffield. Dr. Boobbyer says condemned houses are to be patched up in Nottingham. Dr. Millard of Leicester, reports in similar terms, and Dr. Eustace Hill says the industrial districts of his county are in the same state.

I am told that the country and the Ministry of Health know all about it. I don't think, however, the "man in the street" realises the state of affairs.

The Congress of the Sanitary Institute met, full of hope, at Newcastle, in 1919, to discuss ideals of sanitary progress. After the lapse of a year they met again in Birmingham. I think there should have been some intimation to the public that the year had been one of retrogression, and that the overcrowding and housing conditions of the great towns and industrial districts are getting worse week by week, that it is impossible to condemn houses, however unfit for habitation they may be, and that unless there is a very great change it will be years before we can dream of clearing slums and providing open spaces in the congested parts of our great towns.

The aspect of the matter with which I wish to deal is the shortage of labour.

During the war a large number of building operatives were killed and disabled, and the usual number of apprentices did not enter the building trades. Consequently, after the Armistice, there were far fewer building operatives than there were in 1914, before the outbreak of war.

During the war, hardly any houses were built and the erection of public buildings was postponed. Further, the war has given rise to a widespread determination that the housing of the population must be improved, and that for this purpose many old houses should be condemned and many slum areas cleared. It thus comes about that, in addition to the arrears of houses and public buildings, we need many houses to replace the houses which ought to be condemned.

As regards public buildings, I do not suppose Sheffield is exceptional. We want Primary Schools, Secondary Schools, a School Medical Department, a Tuberculosis Dispensary, Sanatoria, a Public Hall, etc.

It follows from the last paragraphs that there is infinitely more work to be done and considerably fewer men to do it.

It is also impossible, owing to the shortage of labour, to get exisitng houses renovated and kept in as good condition as they were in before the war.

The City Architect of Sheffield tells me that they have 121 bricklayers employed on the Corporation houses, and that they would like to have four times that number.

One or two points occur to me with regard to the training of building operatives :—

1. Owing to the enormous need for new houses and new buildings, the Government ought to have no difficulty in giving a guarantee of continuous employment to the members of the building trades during the next generation.

2. Although an apprenticeship to the building trades nominally lasts five years, from 16 to 21, there is no test of craftsmanship at the end of it. The present seems to be a convenient time to substitute a period of training, beginning at any reasonable age and terminating with a test of craftsmanship for the present anomalous system. The building trades of the country might be asked to frame training regulations and tests, as has already been done in the case of the legal, medical and dental professions.
3. It is stated that there are a large number of demobilised men unemployed and waiting to be trained and that the Government is willing to train men.

Everybody agrees that in order to pay our way there ought to be increased production. In order to obtain increased production we ought to be able to train male and female producers at any age. Lately, the plan of increased production seems to have been given up as a hopeless task, and we have taken to discharging women from work which they can do quite efficiently and substituting men for them instead of training men for work which is crying out for them.

There is talk of trade depression and unemployment. Surely we shall have more sense as a nation than to put the unemployed on to making roads, etc., when there is this crying need for houses.

No doubt there is a money difficulty and I can imagine that the financiers are among the few people who view the present inability to build houses with relief.

At the present time we need to concentrate on the labour shortage because, up to now, the money has been provided and the labour is not forthcoming. We can leave the money trouble to be met when it arises.

When one reads the returns issued by the Ministry of Health, when one thinks of the work involved in the preparation of 10,748 schemes, the innumerable Housing Conferences, etc., and that up to now the total result since the Armistice is the completion of a little more than two thousand houses for the whole country, one is reminded of the latin line *Parturiunt montes, nascetur ridiculus mus.*

If there are any poor-spirited ratepayers or taxpayers who are callous or indifferent as to the terrible housing conditions which prevail at the present time, how they must be chuckling at the thought that their pockets are being spared by our inability to find the men to build the houses.

Surely, with a little commonsense and goodwill, and a " pull all together," we ought to be able to overcome this difficulty which blocks the way to the realization of the better England.

Henry Saxon Snell Prize.

THE Henry Saxon Snell Prize was founded to encourage improvements in the construction or adaptation of sanitary appliances, and is to be awarded by the Council of The Royal Sanitary Institute at intervals of three years, the funds being provided by the legacy left by the late Henry Saxon Snell (Fellow of the Institute).

The Prize in the year 1921 will consist of Fifty Guineas and the Medal of the Institute, and is offered for an Essay on " Suggestions for a System of Central Hot Water Supply and Heating, adapted to Modern Housing Schemes, and to existing groups of Houses."

The following points should be dealt with :—

1. Central Installation.
2. Appliances for and methods of distribution.
3. Methods of conserving the heat.
4. Provision for continued supply during repair of system.
5. Cost ; Initial and Service.
6. Combination with other services for reducing expenses.

General Conditions.

1. The Essay to consist of not more than 5,000 words, to be typewritten on foolscap, one side only, and to be illustrated by drawings or sketches.

2. Two Competitors may combine in sending in an Essay and Drawings.

3. Essays must be delivered on or before August 31st, 1921, addressed to the Secretary of The Royal Sanitary Institute, 90, Buckingham Palace Road, London, S.W. 1, and the following points must be observed :—

(*a*) The Essays to be submitted without the name of the competitor.

(*b*) The Essays to bear a motto, legibly marked on the right hand lower angle of the first sheet.

(*c*) The Essay to be enclosed in an envelope, bearing the words " Henry Saxon Snell Prize," and the Competitor's motto at the right hand lower angle, and to be directed to the Secretary of The Royal Sanitary Institute.

(*d*) The Essays to be accompanied by a letter containing the Competitor's name and address, which is to be enclosed in a separate envelope, sealed with a blank seal, and having on the outside " The Henry Saxon Snell Prize," and the same motto as that attached to the Essay submitted.

4. Should none of the Essays be considered of sufficient merit or importance to deserve the Prize offered, the Council reserve the right of withholding the award.

5. In the event of two Essays being of equal merit, the Prize may be divided.

6. The Essay or Essays to which the Prize is awarded are to become the property of the Institute.

Should the Council decide to publish the Essay or Essays to which the Prize is awarded, notice will be given to the Competitor or Competitors in order that patent rights may be secured, if desired, for any of the appliances mentioned in the Essay or Essays.

7. The carriage of the Essays to and from the Office of the Institute, and all expenses incidental thereto, must be paid by the Competitor. Unsuccessful essays will be returned on application, on the production of a formal demand within a period to be specified after the close of the Competition.

8. Due care will be taken of all Essays, but the Institute will not be responsible for any loss of, or damage to them while they remain in its keeping.

E. WHITE WALLIS,
Secretary.

90, Buckingham Palace Road, London, S.W. 1.
November, 1920.

THE ROYAL SANITARY INSTITUTE.

FOUNDED 1876.

REVIEWS OF BOOKS.

PHYSIOLOGY AND NATIONAL NEEDS.*

War lectures on science subjects bearing on the national life have an interest in the reconstruction period in which we live and should be widely read by the general public. The subject of science in political circles and the public press has never, as the editor points out, been so disastrous for us as in the earlier years of the recent war. Physiology played its part in the Food Problem and the essays on Vitamines, Scurvy, and on the conservation of our cereal reserves give us valuable information for the well-being of the nation in time of peace. Dr. Paton's lecture on Physiology in the study of disease, is of historical value in showing how gassing, wound shock, and tetany were amenable to treatment when the physiology involved became the basis of the practical hygiene necessary to combat these war evils.

S. R.

HOME AND COMMUNITY HYGIENE.†

This is one of a series of "Home Manuals" edited by Benjamin R. Andrews, Ph.D., of Teachers' College, Columbia University. Miss Broadhurst, the author of this volume, is Assistant Professor of Biology at the same college, and the majority of the other manuals apparently, and not unnaturally, have been prepared by college colleagues of the editor.

"Home and Community Hygiene" is dedicated to the "Nurses, Teachers and Mothers of America," and since it was published in August, 1918, and reprinted in January, 1919, and again in December of that year, it would appear to have proved to the liking of those for whom it was intended. Having been so successful it hardly seems necessary to say much by way of review. The author has endeavoured to cover a very wide field, and in the space of 375 pages considers 26 different aspects of the subject. The book is not well balanced, and the treatment of the bulk of the subjects is rather superficial. As has been stated, however, it appears to suit the American Nurses, Teachers and Mothers. Its entire colouring is purely American: the references are almost all to American books and reports, and wherever practice is mentioned it is American not foreign practice that is described. The appeal to the English reader is therefore, small. The book contains a considerable number of illustrations, an unnecessarily large proportion for some reason or other being pathological and bacteriological. Many chapters that might quite well have been illustrated are unenlivened with pictures.

C. P.

* PHYSIOLOGY AND NATIONAL NEEDS, Edited by W. D. Halliburton, F.R.S. 8vo., 162pp. London, 1919. Constable and Co., Ltd. Price, 8s. 6d.

† HOME AND COMMUNITY HYGIENE, by Jean Broadhurst, Ph.D. 8vo., 428 pp. Philadelphia and London, 1920. J. B. Lippincott & Co. Price, 10s. 6d.

The Shibboleths of Tuberculosis.*

Under a somewhat cryptic title, Dr. Marcus Paterson has written a book on the problems of Tuberculosis, which not only goes far to revolutionise many old fashioned and incorrect notions of what Tuberculosis is and means, but also tends to correct in many material ways the prevailing pessimistic views on the general aspects of prevention and cure. There are 59 different shibboleths in the book which are carefully considered, and refuted or corrected by the author; and in doing so, Dr. Paterson, from his long experience at Frimley and elsewhere, lets in a flood of light upon the whole subject. The book is deserving of careful study by every medical practitioner, Tuberculosis officers, and Medical Officers of Health in the country; and every Tuberculosis Health Visitor and Tuberculosis Nurse would learn much from its pages, which would be helpful in their work. If the Ministry of Health could see its way to present a copy of the "Shibboleths of Tuberculosis" to everyone of the afore-mentioned persons throughout England and Wales, something would be achieved in the educational campaign which lies at the root of the whole problem of dealing effectually and on economically sound lines with Tuberculosis. It is no use trying to instruct the public and lay authorities on the Tuberculosis question until medical and scientific opinion is itself informed on the subject; and there can be little question that the great bulk of the medical profession is at present but very inadequately acquainted with the best modern views of how Tuberculosis can be prevented and cured.

L. C. P.

War against Tropical Disease.†

The author tells us that he is not a sanitary inspector, but that he has had to perform the duties of that onerous office in many tropical countries, and enunciates his belief that, just as the non-commissioned officer is the backbone of the British Army, so should the well-trained, certificated, sensible, honest and energetic British sanitary inspector be the backbone of sanitation in our tropical colonies and dependencies. With this we agree cordially, and the volume under review is an eloquent witness to the truth of this assertion. There are seven articles in this book, some of which have appeared elsewhere in the reports of the Wellcome Tropical Research Laboratories. One article, entitled "The Palm from a Sanitary Standpoint," is new and delightful. We may say at once that this volume is difficult to review because it contains practically nothing which is open to criticism. It is illustrated profusely and the letter-press instructive and easy reading. The versatility of Dr. Andrew Balfour in the cause of tropical hygiene is great, and he is equally at his ease in discussing and explaining the medical entomology of Salonica as he is in describing the anomalies and mistakes in sanitary effort as he found them in the West Indies.

* The Shibboleths of Tuberculosis, by Marcus Paterson, M.D. 8vo., 239 pp. London, 1920. John Murray. Price 10s. 6d.

† War against Tropical Disease, by Andrew Balfour, C.B., C.M.G., M.D. Large 8vo., 219 pp., with coloured plate and 180 figures. London. 1920. Wellcome Bureau of Scientific Research and Ballière, Tindall & Cox. Price 12s. 6d.

Venezuela, Columbia, East Africa, Egypt, Serbia or Gallipoli. No matter where we open the pages of this volume, there is always something interesting and something illustrating how not to do things or how sanitary difficulties can be over- come under trying and discouraging conditions. The book is a striking exposition of the sanitary problem in the tropics and of the magnitude of the white man's burden in those areas. None the less it is an inspiring and hopeful statement ; inspiring because it suggests new ideas, hopeful because it shows that new ideas in that field of work are not barren of results. Whether we live here in Britain or have a call to duty in the tropics, this volume is worthy of quiet study.

R.H.F.

Medico-Tropical Practice.*

This is a fully revised new edition of a book which appeared in 1908. It is very much changed and much improved, as some chapters have been omitted, new ones inserted and the general subject matter rearranged. It is essentially a handbook for the medical practitioner and student, and gives an astonishingly large amount of information in a small and handy volume. We have tested the book in search of information regarding many matters of tropical hygiene and medicine, and not found it to fail us ; on the contrary, it has shown itself to be remarkably sound and informative, both theoretically and practically. The chapter on the tropical environment is particularly good, and we like also the wealth of practical detail in respect of laboratory and microscopical technique, without a working knowledge of which no man can hold his own as a physician or medical adviser in the tropics. In so progressive a science as medicine, it is practically impossible to keep a book absolutely up-to-date, once it has gone to press. This explains some omissions, such as the absence of a reference to intravenous injections of antimony in bilharzia infections, and to the existence of leptospira in yellow fever. These, however, are minor blemishes and detract really little from the general excellence of the book, which constitutes both a reliable and handy volume of reference for the busy practitioner, and a reliable manual for the student or other worker for a diploma in tropical hygiene and medicine.

R H F.

Sanitary Law in Question and Answer.†

It was a happy idea of Dr. Porter's to present to the student with no legal training the difficult and unattractive facts of Public Health legislation in the form of question and answer ; because the effect is to rob the subject of much of its difficulty and of some of its unattractiveness. The book well meets the needs of those for whom it has been written, for in addition to being a real aid to the student, it conveys just that knowledge which a Medical

* Medico-Tropical Practice, by Gilbert E. Brooke, M.A., L.R.C.P., D.P.H. Second Edition. 8vo., 532 pp., 58 figures, 2 plates. London. 1920. Charles Griffin & Co., Ltd. Price 18s. 3d.

† Sanitary Law in Question and Answer, by Charles Porter, M.D., B.Sc., M.R.C.P. 8vo., 180 pp. London, 1920. Longmans, Green & Co. Price, 6s. 6d.

Officer of Health or other Sanitary official should be expected to commit to memory. The Acts themselves must often be consulted for further details of legal procedures or the Clerk of the Local Sanitary Authority must be asked to advise thereon.

As it is 10 years since the last edition was published and so much important Public Health legislation has since been passed by Parliament, it is high time that a new edition appeared. Indeed, in these days no work upon Sanitary Law should be issued in an edition which is unlikely to be sold out in the course of over 4 years.

The work has been brought well up-to-date and the subject-matter judiciously presented to the student, to whom it may be confidently recommended.

H. R. K.

Public Health Laboratory Work (Chemistry).*

In this, the seventh, edition of his well-known book on Public Health Laboratory Work, Dr. Kenwood deals entirely with chemistry, and to show that this is so the word "Chemistry" has been introduced, in brackets, into the title. The references to bacteriological matters are few, the time for making a special and separate volume on microbiology having, it is felt, arrived. The preparation of this has been entrusted to Dr. Délepine. When it appears it will find itself in company with the best known and most widely read of all laboratory books. For it nothing better can be wished, than that it should prove as ready and helpful a friend in the laboratory and show as great a tendency to go on, apparently, forever as this book of Dr. Kenwood's.

C. P.

Insect Life on Sewage Filters.†

Purification of sewage by living organisms is complex, and biochemical changes require long and careful study before they can be definitely established. The *Podura* flies on contact filters have been noticed, and that they were living in or on sewage was obvious. This insect's true name is *Achorutes viaticus* (L) *Tulb*, and high nitrification accompanies their life besides having a distinctly beneficial effect on the cleanliness of the filters. The authors have established these facts by definite experiments on experimental filters inoculated with these insects.

S. R.

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* Public Health Laboratory Work (Chemistry). By Henry R. Kenwood, C.M.G., M.B., F.R.S. Edin., D.P.H., F.C.S., 8vo., 420 pp. London, 1920. K. H. Lewis & Co., Ltd.

† Insect Life on Sewage Filters, by W. H. Parkinson, M.D., D.P.H., and N. D. Bell, A.I.C. 8vo., 64pp. London, 1919. The Sanitary Publishing Co., Ltd. Price, 3s. 6d.

MEETINGS HELD.

Sessional Meeting.

Doncaster.—The meeting was held in the Mansion House, on Friday, October 15th, when a discussion on " Some Aspects of the Housing Question," was opened by Harold Scurfield, M.D., D.P.H., Medical Officer of Health, Sheffield. The chair was taken by Prof. H. R. Kenwood, C.M.G., M.B., F.R.S.E., and the members were welcomed by the Mayor and Chairman of the Health Committee, and entertained to Tea by the Committee.

On Saturday, October 16th, visits were made to inspect Houses in course of construction, under the Corporation Housing Scheme ; to the Race Common to inspect Race Course and Stands ; and to " Sand House " and Grotto.

Examinations.

Since the last issue the following examinations have been reported :—

York, Oct. 8th and 9th.	Newcastle, Nov. 5th and 6th.
Nottingham, Oct. 15th and 16th.	Manchester, Nov. 19th and 20th.
Liverpool, Oct. 22nd and 23rd.	Liverpool, Nov. 26th and 27th.
Hull, Oct. 29th and 30th.	London, Dec. 3rd and 4th.

At these examinations 475 candidates presented themselves, and the following were awarded certificates :—

Sanitary Science as applied to Buildings and Public Works.

Bell, John George, *Clapham.*
Bollard, Edward Gomer, *Chester.*
Chattle, John Fairbrother, *Clapham.*
Grimmond, Alexander Gow, *Bournemouth.*
Hughes, Archibald John, *Woodford Green.*
Khanna, Prem Nath, *London.*
Lennard, Frederick Henry, *Richmond.*
Long, Frederick Alan, *Manningtree.*
Moss, Arthur, *Manchester.*
Puzey, Frederic Henry, *Chelsea.*
Ridley, Harold, *York.*
Rodwell, Fred, *Bury.*

Maternity and Child Welfare Workers.

Adair, Florence Norah, *Herne Hill.*
Atherton, Frances Margaret, *Harrow.*
Bartholomew, Louisa Elizabeth, *Marylebone.*
Barugh, Violet, *London.*
Cook, Ellen Elizabeth, *Barking.*
Cowen, Emily Mary, *Tadcaster.*
English, Alice Margaret, *Wateringbury.*
Hockin, Gladys May, *London.*
Kellett, Florence, *Headingley.*
Peacey, Edith Constance, *Kensington.*
Peake, Olive Eva, *New Basford.*
Schofield, Amy, *Droylsden.*
Silversides, Kate Ellen, *Bilston.*
Tafe, Cicely Ursula, *Willesden Green.*
Wilson, Martha Hannah Dawson, *Leeds.*

Smoke Inspectors.

Gray, James Vincent, *Leeds.*

Inspectors of Nuisances.

ADDISON, THOMAS WILLIAM, *Brandon.*
AMES, JOHN, *Manchester.*
BANKS, GEORGE, *Blænavon.*
BASTOW, JOHN WILLIAM, *Keighley.*
BELL, HELEN, *Bradford.*
BENJAFIELD, HERBERT JOHN, *Aldershot.*
BLAYNEY, BERNARD, *Nottingham.*
BOARDMAN, HAROLD WILLIAM, *Minehead.*
BONE, WILLIAM HENRY, *Carlisle.*
BOYES, WILLIAM ARTHUR, *Heworth.*
BRADING, ERNEST FREDERICK, *Ventnor.*
BRADY, FRANCIS BERNARD, *Liverpool.*
BRIDGE, JOHN HAMER, *Haslingden.*
BROADHEAD, EDWARD SCOTT, *Carlisle.*
BROOKES, FREDERICK COOPER, *Sheffield.*
CARDEN, JOHN JOSEPH, *Rochester.*
CARRICK, WILLIAM, *Edinburgh.*
CLEARY, JOHN, *Southfields.*
CLOSS-PARRY, JOHN, *Carnarvon.*
COLLYER, THOMAS ARTHUR, *Birmingham.*
COLMAN, JOSEPH, *Durham.*
COXALL, EMILY ELIZA, *Carrington.*
DAVIES, DAVID HOWEL, *Bayswater.*
DALLOW, LEONARD, *Rowley Regis.*
DAVIES, EDWARD JOHN, *Newport.*
DAWSON, CHARLES JAMES, *Manchester.*
DRABBLE, RUTH, *Dore.*
EMPSON, ELIZABETH, *Hull.*
EVANS, THOMAS JOHN, *Cardiff.*
FINLAYSON, JOHN, *Inverness.*
FISHER, JACK SCOTT, *Weeley.*
FISHER, PHILIP JOHN, *Blackburn.*
FOOT, EDITH ROBINA, *King's Cross.*
FORD, JOHN, *Mytholmroyd.*
FOX, SYDNEY, *Hemsworth.*
FRANCIS, DAVID JOHN, *Falmouth.*
FREER, EVELYN ELIZABETH, *Hampstead.*
GEEN, ERIC LIONEL WELTON, *Ipswich.*
GIBSON, KENNETH, *Gateshead.*
GROOME, GEORGE, *Earl's Colne.*
HAMILTON, ALFRED WINSTANLEY, *Manchester.*
HAMMOND, LEONARD, *Wakefield.*
HANSFORD, ARTHUR REUBEN, *Tisbury.*
HILL, JOHN, *Hull.*
HILL, THOMAS DANIEL, *Cardiff.*
HILSLEY, JOHN, *Chorley.*
HOBLYN, HARRY, *Dudley.*
HOCKEN, EDMUND BECKINTON, *Hull.*
HORNE, EDITH, *Nottingham.*
HORT, LAWRENCE JOHN, *Highams Park.*
HUTCHINGS, WILLIAM HENRY, *Fulham.*
HUTTON, JOHN, *Gateshead.*
JACKSON, HARRY, *Leeds.*
JOHNSON, ARTHUR, *Burnley.*
JONES, ANNIE BLODWEN, *Chelsea.*
JONES, ELIZABETH, *Hawarden.*
KNOWLES, FRANK, *Leeds.*
LAVENDER, JOHN PERCY, *Gateshead.*
LEE, ANNIE ROSINA, *Nottingham.*
MACDONALD, HUGH, *Lochinver.*
MCGARVIE, ELIZABETH, *Broughton.*
MACKRIELL, THOMAS GEORGE, *Redhill.*
MCPHERSON, ARTHUR GEORGE, *Henley.*
MALCOLM, DAVID, *Manchester.*
MARSDEN, FREDERICK WILLIAM, *Darwen.*
MARTIN, KATHLEEN SCHALLER, *Wellington.*
MEADOWS, CHEVALIER PHILIP HAMILTON, *Southall.*
MITTON, EDWIN, *Burton-on-Trent.*
MONTGOMERY, KENNETH, *Sydenham.*
O'DONOGHUE, PATRICK EDWARD, *Brighton.*
O'KEEFFE, MARTIN, *Edinburgh.*
PANTOLL, ALICE MAUDE MARY, *Croydon.*
PENNINGTON, JESSIE ELIZABETH, *Worksop.*
PONSFORD, GEORGE, *Litherland.*
READ, JAMES LIONEL, *Newport.*
REEMAN, GORDON STANLEY, *Lowestoft.*
ROBERTS, ALFRED REGINALD, *Hornsea.*

SAUNDERS, ALAN BLAKE, *Strood.*
SCOTT, WILLIAM HENRY, *Wallsend.*
SELWOOD, FREDERICK RICHARD, GABRIEL, *Swindon.*
SHARPE, EMSLEY, *Pudsey.*
SHIMELD, HAROLD, *Sheffield.*
SMITH, AMELIA, *Levenshulme.*
SMITH, VICTOR WYNN, *Farnborough.*
STEEDEN, EDWARD JAMES, *Leytonstone.*
SUGDEN, PERCY WILLIAM, *Hackney.*
SUMMERFIELD, HAROLD, *Folkestone.*
THOMAS, JOHN, *Pen-y-groes.*
THOMPSON, ALBERT, *Harrogate.*
THOMPSON, GEORGE ALFRED, *Leeds.*
THOMPSON, THOMAS RICHARD, *Malton.*
THORNE, EVA, *Erdington.*
TILEY, WILLIAM JAMES, *Tovil.*
TOWNSEND, WILLIAM WILKINSON, *Wakefield.*
TUGMAN, KATHLEEN MARY, *Kidderminster.*
TURNBULL, NATHANIEL WILLIAM JOHN, *Kentish Town.*
WADE, ALFRED, *Sheffield.*
WALSH, FRANK BARRINGTON, *Stoke Newington.*
WARD, GEORGE, *Manchester.*
WEBB, GEORGE HERBERT, *Alton.*
WHITE, SYDNEY STAFFORD, *Bradford.*
WILLS, JOHN GEORGE DRYDEN, *Birkenhead.*

Women Health Visitors and School Nurses.

BANNERMAN, ALEXANDRINA, *Whitechapel.*
BEET, ELIZABETH, *Millbank.*
BELYEA, AMY BEATRICE, *Leigh.*
BENDALL, BEATRICE CATHERINE, *Alton.*
BLAIR, MARY LILIAN, *Highgate.*
BOWES, EVA MARGARET, *Wanstead.*
BOYD, EMILY SARAH, *Durham.*
BRAMLEY, ETHEL MAY, *Leicester.*
BRAYSHAW, FLORENCE, *Tufnell Park.*
BROADHURST, MARY J., *Highgate.*
BROOKE, HELEN CHRISTINE, *Blackheath.*
BROOKER, RHODA, *Wanstead.*
BROWN, MARY JANET, *Glasgow.*
CARROLL, CATHERINE MARIE VICTORIA, *York.*
CARTER, ELIZABETH ELLEN, *Canonbury.*
CHAPMAN, WINIFRED CHRISTIANA, *London.*
CHATFIELD, GWENDOLEN PERCY ELIZABETH, *Chelsea.*
CHUBB, OLIVE, *Battersea.*
CLUBBE, EMMA, *New Cross.*
COLLINS, HILDA MARY, *London.*
CORDON, IDA FLORENCE EMMA, *Sutton.*
CORDWELL, ALICE MAY, *London.*
COTTER, KATHLEEN, *Rochdale.*
CROSS, WILHELMINE CAROLINE, *S. Croydon.*
DE MANT, MONICA, *Newcastle.*
DEVERS, SUSANNA J., *Clapham.*
DICKENSON, HANNAH BURNISTON, *Egton Bridge.*
DICKINSON, ALICE, *Victoria Park.*
DILLON, DORA, *Balham.*
DIXON, RACHEL, *Jarrow.*
FARRAR, FLORENCE M., *York.*
FARROW, MARGUERITE DOROTHEA, *Beckenham.*
FERGUSON, MARGARET ISABELLA GRANT, *Edinburgh.*
FITZGERALD, GRACE ALICE, *Birkenhead.*
FLACK, ESTHER, *Chester.*
FLETCHER, AGNES, *Macclesfield.*
FODEN, CATHERINE MIRIAM, *New Brighton.*
GOODMAN, DOROTHY, *Croydon.*
GOSTICK, EDITH MURIEL, *York.*
GOULD, RUTH, *Liverpool.*
HEARNSHAW, EMMA MARIA, *Leeds.*
HIGNETT, BEATRICE MAY, *Leeds.*
HOWES, JANET HAWARD, *London.*
IRELAND, DAVINA W., *London.*
LOVE, SARAH EMILY MARY, *Tottenham.*
LUCKETT, MABEL, *Manchester.*
LUSTY, LOUISA MARY, *Dover.*
MCBRIDE, ELIZABETH JOSEPHINE, *Liverpool.*
MACKENLEY, ISABELLA, *Whitley Bay.*
MCMINN, AGNES WOOD, *Wishaw.*
MARCHBANK, JANE NICHOL, *Corbridge.*

MURPHY, HELEN ANNIE, *Earl's Court.*
OLEY, ADA JANE, *Farnworth.*
PALETHORPE, KATHLEEN HOWARD, *London.*
PALMER, ROSINA, *Holloway.*
PICKARD, FLORENCE REBECCA, *Thornbury.*
PILKINGTON, ALICE BEATRICE, *Grimsby.*
PORTEOUS, EMMA MARGARET, *Deptford.*
REAR, MAY, *Bermondsey.*
REES, GWENDOLEN, *Kensington.*
RICHARDS, MARGARET BESSIE, *Durham.*
RICHARDS, MYFANWY, *Liverpool.*
RIGBY, ANN, *E. Ham.*
ROBUS, MABEL FREDERICA, *Millbank.*
ROE, KATHARINE MARY, *London.*
ROGERS, VIOLET, *Hemel Hempstead.*
ROWLAND, KATHERINE, *Wallasey.*
SALMON, EMMA, *Staines.*
SCOTT, ELIZABETH S., *Bexley.*
SKILTON, JULIA, *Westham.*
SMITH, SYBIL MIRIAM, *E. Ham.*
SYMES, MAY, *London.*
TAMPLIN, ELLEN MARY, *Bedfont.*
THORNLEY, ELIZABETH ANN, *Ulleswater.*
WALLING, ETHEL WINIFRED, *Leytonstone.*
WARD, REBECCA, *Oldham.*
WEATHERILT, MARIAN FLORENCE, *Hampstead.*
WESTON, WINIFRED RUBY, *Uckfield.*
WHITE, GERTRUDE, *Ashfield.*
WIGHAM, MARY ISABEL, *Low Fell.*
WILDBLOOD, MARJORIE STANTON, *Long Melford.*
WILKINSON, JENNIE LEECH, *Blackburn.*
WILSON, FREDA MARGARET, *Hampstead.*
YATES, MAY, *Walton.*

School Hygiene, including Elementary Physiology.

CLARKE, MURIEL BENNETT, *Harrogate.*
LAING, AGNES FERGUSON, *Harrogate.*
LAING, MARJORIE JOYCE, *Liverpool.*

Inspectors of Meat and other Foods.

BASTABLE, NORMAN, *Langley.*
BASTOW, JOHN WILLIAM, *Keighley.*
COOK, FREDERICK CARPENTER, *Chelsea.*
DAVIES, JOHN ARTHUR, *Swansea.*
DAY, HENRY RICHARD, *Axbridge.*
DEUCE, HUBERT EDGAR, *Kettering.*
EVANS, DANIEL MORGAN, *Barry.*
FRANCIS, WILLIAM, *Merthyr.*
GAY, GEORGE, *Edinburgh.*
GLOVER, JAMES ARTHUR, *Cardiff.*
GODDEN, WILLIAM JOHN GEORGE, *Waterloo.*
GRIFFITHS, JACK LLEWELLYN, *Victoria.*
HAMMOND, GEORGE HERBERT, *Leamington.*
HANCOCK, WILLIAM EDWARD, *Folkestone.*
HILL, JOHN, *Hull.*
HOGG, SYDNEY JOHN, *Dunbar.*
INGHAM, JAMES WALTON, *Nelson.*
JOHNSON, ARTHUR, *Burnley*
KNOWLES, FRANK, *Leeds.*
LAYCOCK, JAMES, *Burnley.*
LEONARD, WILLIAM, *Inverkeithing.*
LOVELESS, GEORGE JERRED, *Victoria.*
MCGILL, DUNCAN G., *Dumfries.*
MERWOOD, WILLIAM, *Carisbrooke*
MORAN, ALEX PETER, *Edinburgh.*
NAIRN, MATTHEW, *Edinburgh.*
POWER, EMILY, *London.*
PRICE, HERBERT, *Stockport.*
SARGENT, RAPHAEL MARTIN, *Farnham.*
SUTCH, FRANK, *Deptford.*
TAYLOR, HARRY RYLANCE, *Denton.*
WILLIAMS, RICHARD ERNEST, *Swansea.*

FORTHCOMING MEETINGS.

Sessional Meetings.

Exeter.—Friday, January 28th, at 7 p.m., in conjunction with the Western Branch of the Society of Medical Officers of Health. Discussion on "The Sanitorium Question," to be opened by E. Ward, M.D., F.R.C.S., Tuberculosis Officer, Devon County Council.

On Saturday, January 29th, there will be a short discussion on "Housing," opened by P. H. Stirk, M.R.C.S., D.P.H., Medical Officer of Health, Exeter, followed by a visit to new houses and insanitary areas.

Manchester.—Friday, February 25th, at 7 p.m. in the College of Technology. Discussion on "The use of Open Fires for Domestic Heating" to be opened by Mrs. Margaret Fishenden, D.Sc ; on "The Present Position of Smokeless Fuels," by Captain F. S. Sinnatt, M.B.E., M.Sc., F.I.C., and on "Air Pollution," by Prof. J. Radcliffe, M.Sc.(Tech.).

On Saturday, February 26th, visits will be made to place of local interest.

Ordinary General Meeting.

The Ordinary General Meeting will be held at the Institute on Wednesday, April 27th, at 4.30 p.m.

Lectures.

The next Courses of Lectures for Sanitary Officers will commence on February 7th ; for Health Visitors and Child Welfare Workers on February 11th ; for Meat and Food Inspectors on February 18th ; and for Army Officers and Professional Men on April 11th.

An Introductory Lecture will be delivered by Prof. H. R. Kenwood, C.M.G., M.B., D.P.H., F.R.S.E., on Monday, January 31st, at 5.30 p.m.

Examinations.

In Sanitary Science as applied to Buildings and Public Works, for Inspectors of Nuisances, Maternity and Child Welfare Workers, Women Health Visitors and School Nurses, and School Hygiene, including Elementary Physiology, will be held at :—

Hereford, Jan. 21st and 22nd.	Bristol, March 4th and 5th.
Plymouth, Jan. 28th and 29th.	Portsmouth, March 11th and 12th.
Preston, February 4th and 5th.	Edinburgh, March 18th and 19th.

For Inspectors of Meat and other Foods :—

Manchester, Feb. 18th and 19th.

Congress at Folkestone.

The Right Hon. The Earl of Radnor has consented to act as President of the Congress to be held at Folkestone from June 20th to 25th, 1921.

Calendar for January–March, 1921.

As far as at present arranged.

JANUARY.

21 F.
22 S. } Examinations—Hereford.

28 F.
29 S. } Examinations—Plymouth.

28 F.
29 S. } **Sessional Meeting—Exeter.**

31 M. At 5.30 p.m. Introductory Lecture to Students attending the various courses, by Prof. H. R. Kenwood, C.M.G., M.B., F.R.S.E.

FEBRUARY.

4 F.
5 S. } Examination—Preston.

7 M. Lecture to Sanitary Officers, at 6 p.m. Public Health Acts—English, Scotch, Irish ; other Statutes relating to Public Health, by Wellesley Harris, M.R.C.S., L.S.A., D.P.H., M.O.H., Lewisham.

10 Th. Lecture to Sanitary Officers, at 6 p.m. Public Health (London) Act, etc., by A. Wellesley Harris, M.R.C.S., D.P.H.

11 F. Lecture to Sanitary Officers, at 6 p.m. Factory and Workshop Acts, Smoke Legislation, Food and Drugs Acts, 1899, by A. Wellesley Harris, M.R.C.S., D.P.H.

11 F. Lecture to Health Visitors and Child Welfare Workers, at 6 p.m. Personal Hygiene, Importance of Cleanliness, by J. A. H. Brincker, B.A., M.D., D.P.H.

14 M. Lecture to Sanitary Officers, at 6 p.m. Duties of a Sanitary Inspector, A :— General Outdoor, by A. Wellesley Harris, M.R.C.S., D.P.H.

14 M. Lecture to Health Visitors and Child Welfare Workers, at 6 p.m. The Growth and Development of the Child, by J. A. H. Brincker, B.A., M.D., D.P.H.

16 W. Lecture to Health Visitors and Child Welfare Workers, at 6 p.m. Hygiene of the Special Senses, by Margaret M. Hogarth, M.B., CH.B.

17 Th. Demonstration to Sanitary Officers, at the Public Health Offices, 10, Compton Terrace, Upper Street, Islington, N., at 6 p.m. Book-keeping as carried out in a Sanitary Inspector's Office by James R. Leggatt, Superintendent, Public Health Department.

17 Th. Lecture to Sanitary Officers, at 5 p.m. Duties of a Sanitary Inspector, B :— General Indoor, by A. Wellesley Harris, M.R.C.S., D.P.H.

18 F. Lecture to Sanitary Officers, at 6 p.m. Duties of a Sanitary Inspector.—C. : Offensive Trades and Trade Nuisances, etc., by A. Wellesley Harris, M.R.C.S., D.P.H.

18 F. Lecture to Health Visitors and Child Welfare Workers, at 6 p.m. Physical Development, Margaret M. Hogarth, M.B., CH.B.

18 F. Lecture to Meat Inspectors at the Institute, at 6 p.m., by J. R. Hayhurst, M.R.C.V.S., D.V.S.M. (Vict.), Superintendent, Metropolitan Cattle Market.

18 F.
19 S. } Examinations—Manchester.

19 S. Inspection and Demonstration in the District of Chiswick, at 2.30 p.m. Conducted by J. H. Clarke, Chief Sanitary Inspector, Chiswick.

21 M. Demonstration to Sanitary Officers in the Parkes Museum, at 5.30 p.m., by the Director, E. White Wallis, F.S.S.

21 M. Lecture to Sanitary Officers, at 6 p.m. Elementary Science: Physics, Chemistry, by Alan E. Munby, M.A., F.R.I.B.A.

21 M. Lecture to Health Visitors and Child Welfare Workers, at 6 p.m. Physical Condition affecting Health in Schools, by Margaret M. Hogarth, M.B., CH.B.

22 Tu. Lecture to Sanitary Officers, at 6 p.m. Elementary Science: Physics, Chemistry, by Alan E. Munby, M.A., F.R.I.B.A.

23 W. Inspection and Demonstration at L.C.C. Municipal Lodging House, Kemble Street, Drury Lane, W.C., at 2.30 p.m.

23 W. Lecture to Sanitary Officers, at 6 p.m. Elementary Science: Physics, Chemistry, by Alan E. Munby, M.A., F.R.I.B.A.

23 W. Lecture to Health Visitors and Child Welfare Workers, at 6 p.m. Duties and Powers of Health Visitors, by G. F. Buchan, M.D., D.P.H., M.O.H., Willesden.

25 F. Demonstration to Sanitary Officers in the Parkes Museum, at 5.30 p.m. Meterological Instruments, by the Director, E. White Wallis, F.S.S.

25 F. Lecture to Sanitary Officers, at 6 p.m. Elementary Science: Physics, Chemistry, by Alan E. Munby, M.A., F.R.I.B.A.

25 F. Lecture to Health Visitors and Child Welfare Workers, at 6 p.m. Home Economics and Cookery, by Mrs. K. Lomax-Earp.

25 F. Lecture to Meat Inspectors at the Institute, at 6 p.m., by J. R. Hayhurst, M.R.C.V.S.

25 F. } **Sessional Meeting—Manchester.**
26 S. }

26 S. Demonstration—Meat Inspectors, at Metropolitan Cattle Market, at 1.30 p.m.

28 M. Lecture to Sanitary Officers and Health Visitors, at 6 p.m. Elementary Statistics, by Joseph Priestley, M.D., D.P.H., M.O.H., Lambeth.

MARCH.

2 W. Inspection and Demonstration in the District of Islington, at 2.30 p.m. Conducted by James R. Leggatt, Supt., Public Health Dept., Islington.

2 W. Lecture to Sanitary Officers, at 6 p.m. Infectious Diseases, by Joseph Priestley, M.D., D.P.H.

2 W. Lecture to Health Visitors and Child Welfare Workers, at 6 p.m. Hygiene of the Home, by Mrs. S. Seekings Friel, M.D., D.P.H.

4 F. Lecture to Sanitary Officers, at 6 p.m. Methods of Disinfection, by Joseph Priestley, M.D., D.P.H.

4 F. Lecture to Meat Inspectors, at the Institute, at 6 p.m., by J. R. Hayhurst, M.R.C.V.S.

4 F. Lecture to Health Visitors and Child Welfare Workers, at 6 p.m. Sociological Conditions, by Mrs. S. Seekings Friel, M.D., D.P.H.

4 F. } Examinations—Bristol.
5 S. }

5 S. Demonstration—Meat Inspectors, at Metropolitan Cattle Market, at 1.30 p.m.

5 S. Inspection and Demonstration at the Lambeth Disinfecting Station, at 2.30 p.m. Conducted by Joseph Priestley, M.D., D.P.H.

7 M. Lecture to Health Visitors and Child Welfare Workers, at 6 p.m. Water Supply Fittings and Ventilation in the Home, by J. H. Clarke, Chief Sanitary Inspector, Chiswick.

8 Tu. Lecture to Sanitary Officers, at 6 p.m. Water: Composition, Pollution and Purification, by Joseph Priestley, M.D., D.P.H.

9 W. Inspection and Demonstration in the District of Chiswick, at 2.30 p.m. Conducted by J. H. Clarke, Chief Sanitary Inspector, Chiswick.

9 W. Lecture to Sanitary Officers and Health Visitors and Child Welfare Workers, at 6 p.m. Sanitary Appliances, by W. C. Tyndale, O.B.E., M.INST.C.E.

11 F. Lecture to Sanitary Officers, at 6 p.m. Details of Plumbers' Work, by Walter Scott.

11 F.
12 S. } Examinations—Portsmouth.

12 S. Inspection and Demonstration at the Express Dairy, College Farm, Finchley, at 2.30 p.m.

12 S. Demonstration—Meat Inspectors, at the Metropolitan Cattle Market, at 1.30 p.m.

14 M. Lecture to Sanitary Officers and to Health Visitors and Child Welfare Workers, at 6 p.m. House Drainage, by W. C. Tyndale, O.B.E., M.INST.C.E.

16 W. Inspection and Demonstration in the District of Islington, at 2.30 p.m. Conducted by James R. Leggatt, Supt., Public Health Dept., Borough of Islington.

16 W. Lecture to Health Visitors and Child Welfare Workers, at 6 p.m. Home Visiting and Advice, by Miss Alice Moss, Sanitary Inspector and Health Visitor, Battersea.

16 W. Lecture to Sanitary Officers, at 6 p.m. Calculations, Measurements and Plans and Sections, by W. C. Tyndale, O.B.E., M.INST.C.E.

17 Th. Lecture to Sanitary Officers and to Health Visitors and Child Welfare Workers, at 6 p.m. Ventilation and Warming, by Edward Willis, A.M.INST.C.E., F.S.I., Engineer and Surveyor, Chiswick, U.D.C.

18 F. Lecture to Sanitary Officers, at 6 p.m. Building Materials, by Edward Willis, A.M.INST.C.E., F.S.I.

18 F. Lecture to Meat Inspectors, at the Institute, at 6 p.m., by J. R. Hayhurst, M.R.C.V.S.

18 F.
19 S. } Examinations—Edinburgh.

19 S. Inspection and Demonstration at Schools and Public Buildings, Chiswick, at 2.30 p.m. Conducted by Edward Willis, A.M.INST.C.E., Engineer and Surveyor.

19 S. Demonstration to Health Visitors and Child Welfare Workers, in the Parkes Museum, at 3 p.m. Conducted by J. H. Clarke, Chief Sanitary Inspector, Chiswick.

21 M. Lecture to Health Visitors and Child Welfare Workers, at 6 p.m. Health Talks and Home Nursing, by Mrs. K. Lomax-Earp, Matron, Health Institute, Kilburn.

22 Tu. Lecture to Sanitary Officers, at 6 p.m. Building Sites, by Edward Willis, A.M.INST.C.E., F.S.I.

23 W. Lecture to Health Visitors and Child Welfare Workers, at 6 p.m. Organisation and Management of Infant Welfare Centres and Clinics, by Charles Porter, M.D., B.SC., M.O.H., S. Marylebone.

25 F. **Good Friday.**

28 M. **Easter Monday.**

APRIL.

1 F. Lecture to Sanitary Officers, at 6 p.m. Sewerage, by H. C. Adams, M.INST.C.E.

1 F. Lecture to Health Visitors and Child Welfare Workers, at 6 p.m. Official and Voluntary Agencies Administering to Child Welfare : the Children Act, by Charles Porter, M.D., B.SC.

2 S. Demonstration of Health Visitors and Child Welfare Workers, in the Parkes Museum, at 3 p.m. Conducted by J. H. Clarke.

2 S. Demonstration—Meat Inspectors, at the Metropolitan Cattle Market, at 1.30 p.m.

2 S. Inspection and Demonstration at the Sewage and Destructor Works, Ealing, at 2.15 p.m. Conducted by W. R. Hicks, A.M.INST.C.E., Borough Engineer and Surveyor, Ealing.

4 M. Lecture to Sanitary Officers, at 6 p.m. Sewage Disposal, by H. C. Adams, M.INST.C.E.

4 M. Lecture to Health Visitors and Child Welfare Workers, at 6 p.m. Prevention of Communicable Disease, by R. Veitch Clark, M.A., M.D., B.SC., D.P.H.

5 Tu. Lecture to Health Visitors and Child Welfare Workers, at 6 p.m. Prevention of Communicable Disease, by R. Veitch Clark, M.A., M.D., B.SC., D.P.H.

6 W. Lecture to Health Visitors and Child Welfare Workers, at 6 p.m. Tuberculosis, by R. Veitch Clark, M.A., M.D., B.SC., D.P.H.

6 W. Inspection and Demonstration, at 3 p.m., at Messrs. Knights' Soap Works, Silvertown, E.

7 Th. Lecture to Health Visitors and Child Welfare Workers, at 6 p.m. Venereal Diseases, by Jessie Campbell, M.B., CH.B., D.P.H.

8 F. Lecture to Sanitary Officers, at 6 p.m. Water Supply, Sources of Supply and Distribution, by H. C. Adams, M.INST.C.E.

8 F. Lecture to Sanitary Officers at 6 p.m. Scavenging, Disposal of House Refuse, by W. R. Hicks, A.M.INST.C.E., Borough Engineer and Surveyor, Ealing.

8 F.
9 S. } Examinations—Aberystwyth.

9 S. Inspection and Demonstration at Wanstead Sewage Works, at 2.30 p.m. Conducted by H. C. Adams, M.INST.C.E.

9 S. Demonstration to Health Visitors and Child Welfare Workers, in the Parkes Museum at 3 p.m. Conducted by J. H. Clarke.

9 S. Demonstration—Meat Inspectors, at the Metropolitan Cattle Market, at 1.30 p.m

11 M. Lecture to Sanitary Officers, at 6 p.m. The Laws, By-Laws, and Regulations affecting the Sale of Food, by R. King Brown, M.D., D.P.H.

11 M. Lecture to Health Visitors and Child Welfare Workers, at 6 p.m. Ante-natal Hygiene, by Margaret G. Thackrah, B.A., M.D., M.R.C.P.

12 Tu. Lecture to Health Visitors and Child Welfare Workers, at 6 p.m. Infant and Maternal Sickness and Mortality, and their Causes, by Margaret Thackrah, B.A., M.D., M.R.C.P.

13 W. Inspection and Demonstration at the Metropolitan Cattle Market, at 11 a.m. Conducted by J. R. Hayhurst, M.R.C.V.S., Superintendent and Veterinary Inspector.

13 W. Lecture to Health Visitors and Child Welfare Workers, at 6 p.m. Care of Mother and Infant, by Margaret G. Thackrah, B.A., M.D., M.R.C.P.

13 W. Lecture to Sanitary Officers, at 6 p.m. Signs of Health and Disease in Animals destined for Food, by J. R. Hayhurst, M.R.C.V.S., D.V.S.M.

15 F. Lecture to Health Visitors and Child Welfare Workers, at 6 p.m. Care of Mother and Infant, by Margaret G. Thackrah, B.A., M.D., M.R.C.P.

15 F. Lecture to Sanitary Officers, at 6 p.m. The Names and Situations of the Organs of the Body in Animals, by J. R. Hayhurst, M.R.C.V.S., D.V.S.M.

15 F.
16 S. } Examination—Sheffield.

16 S. Inspection and Demonstration at East Surrey Waterworks, Purley, at 2.30 p.m. Conducted by H. C. Adams, M.INST.C.E.

16 S. Demonstration to Health Visitors and Child Welfare Workers, in the Parkes Museum, at 3 p.m. Conducted by J. H. Clarke.

16 S. Demonstration—Meat Inspectors, at the Metropolitan Cattle Market, at 1.30 p.m.

27 W. **Ordinary General Meeting, at 4.30 p.m.**

JUNE.

20-25. **Congress and Exhibition—Folkestone.**

LIST OF FELLOWS, MEMBERS AND ASSOCIATES

ELECTED OCTOBER, 1920.

FELLOW.

* Marked thus have passed the Examination of the Institute in Sanitary Science as applied to Buildings and Public Works.
‡ Marked thus have passed the Examination of the Institute for Inspectors of Nuisances.
m Marked thus have passed the Institute's Examination for Inspectors of Meat and other Foods.
s Marked thus have passed the Examination of the Institute in School Hygiene.
v Marked thus have passed the Institute's Examinations for Women Health Visitors and School Nurses.
§ Marked thus have passed the Examination of the Institute for Sanitary Surveyors or Sanitary Inspectors, India.
w Marked thus have passed the Institute's Examination for Maternity and Child Welfare Workers.
m Marked thus have passed the Examination of the Institute for Inspectors of Meat and other Foods.
v Marked thus have passed the Examination of the Institute for Women Health Visitors and School Nurses.

Reg. No.		
4598	1888. *F. 1888. Oct.*	ROBBINS, W. M., *Civil Engineer, Sea View Farms, West New Brighton, S. I, New York, U.S.A.* (LIFE FELLOW.)

MEMBERS.

4582	1920. Oct.	§ABREU, Alfred Charles, *Sanitary Inspector, Burma Railways (Medical Dept.), Rangoon, Burma, India.*
4556	1920. Oct.	ALCOCK, Alexander Mann, B.A., B.A.I., *Deputy Director-General, Tanzim Dept., Ministry of Public Works, Cairo, Egypt.*
4557	1920. Oct.	BANERJI, SRISH KUMAR, B.A., B.SC., L.C.E., *Chief Officer and Engineer, Shikarpore, Sindh, India.*
4558	1920. Oct.	*s*BELL, Miss Jean, *Principal, St. Margaret's School and Domestic Science College, Trinity Road, Harrogate.*
4559	1920. Oct.	BERRY, William James, M.B.E., P.A.S.I., *Assistant Sanitary Engineer to Government of Bengal, Mercantile Buildings, Lal Bazar, Calcutta, India.*
4583	1920. Oct.	*BOARDMAN, Harold William, *3, Albany Road, Douglas, Isle of Man.*
4560	1920. Oct.	BOUCHER, Seraphin, M.D., D.P.H., *Director, Department of Health, City Hall Annex, Montreal, Canada.*
4561	1920. Oct.	BROOKE, Gilbert Edward, M.A., L.R.C.P., D.P.H., *Chief Health Officer, Government Health Office, Singapore.* (LIFE MEMBER).
4562	1920. Oct.	BROWN, Chester Pettit, M.A., M.B., D.P.H., *Medical Superintendent, Quarantine Station, St. John, N.B., Canada.*
4563	1920. Oct.	BURGESS, William Leslie, M.B., CH.B., M.D., D.P.H. (*M.O.H.*), *17, West Bell Street, Dundee, Scotland.*

4562 1912. Nov. ‡CHILVERS, George Belson, *Borough Engineer & Surveyor, Town Hall, Buckingham.*

4564 1920. Oct. CYRIAX, Richard Julius, M.D., M.R.C.S., L.R.C.P., D.P.H., *The Tuberculosis Dispensary, 35, Coton Road, Nuneaton, Warwicks.*

4565 1920. Oct. DUNCAN, Cecil Cooke, F.I.C., F.C.S., *Public Analyst, The Shire Hall, Worcester.*

4566 1920. Oct. ‡*m*FINN, Thomas Smith, *" Lisheen," Rotherham Road, Hemsworth, near Wakefield.*

4594 1920. Oct. *FRICKER, James Percy, *55a, High Street, Kingston-on-Thames.*

4595 1920. Oct. HUMPHREYS, Charles Evan, M.R.C.S., L.S.A., D.P.H., (*County M.O.H.*), *County Health Offices, Newtown, North Wales.*

4567 1920. Oct. HUNTER, Ronald Nelson, M.R.C.S., L.R.C.P., D.P.H., (*Assist. M.O.H.*), *Public Health Dept., Town Hall, Deptford.*

4568 1920. Oct. IYENGAR, Hampapur Sampath, L.S.E., *" Home O' Felicity," Shankarpur, Bangalore, India.*

4569 1920. Oct. JONES, Clement Edward, *Chief Sanitary Inspector, Municipal Committee, Lahore, Punjab, India.*

4570 1920. Oct. LAW, William, M.C., A.M.INST.C.E., *Deputy Borough Engineer and Surveyor, Town Hall, South Shields.*

4581 1920. Oct. *MACKMIN, Henry A., *" Glenlynn," Beulah Road East, Thornton Heath, Surrey.*

4571 1920. Oct. MCCLINTOCK, Thomas Andrew, M.R.C.V.S., F.E.V.M.A., *Veterinary Surgeon, Letterkenny, Co. Donegal, Ireland.*

4572 1920. Oct. MAHABIR, Major Kenneth Grant, M.D., M.SC., D.P.H., *125, North Street, Halifax, Nova Scotia, Canada.*

4573 1920. Oct. ‡MANSFIELD, William Thomas, M.INST.M.& C.E., *Municipal Engineer, Blenheim, New Zealand.*

4585 1920. Oct. *MARTIN, Leonard Bertie, *27, Honeywell Road, Wandsworth Common, S.W. 11.*

4586 1920. Oct. ‡*MICHELL, Norman Henry, *City Surveyor's Office, The Council House, Birmingham.*

4587 1920. Oct. ‡*w*MOODY, Miss Marian, *9, Granville Avenue, Forest Hall, Newcastle-upon-Tyne.*

4588 1920. Oct. ‡*w*OCKWELL, Miss Jessie Ellen, *10, Winifred Road, Stockport.*

4574 1920. Oct. OULTON, Ernest Vivian, M.B., B.A., M.R.C.S., L.R.C.P., (*M.O.H.*), *Public Health Dept., Port Said, Egypt.*

4575 1920. Oct. PARKINSON, Henry C., M.INST.MUN.E., *Engineer, Armagh R.D.C., 1, Russell Street, Armagh, Ireland.*

4593 1913. May *PHELPS, Arthur Cooper, *3, Streatham Place, Streatham Hill, S.W. 2.*

4576 Oct. 1920. POLLOCK, Andrew L., M.I.MUN.E., *Assist. County Surveyor, Derry C.C., Captain Villas, Limavady, Co. Derry, Ireland.*

4577 1920. Oct. ROBERTS, Joseph Watts, L.S.A., (*M.O.H.*), *"Mytholme," Cadishead, near Manchester.*

4589 1920. Oct. ‡*w*SAUNDERS, Miss Annie, *"Rokeby," Pelsall, Wallsall, Staffs.*

4596 1920. Oct. SELWYN, William Ingram, F.S.I., F.A.I., *London & South Western Railway, Estate Office, Addington Street, Waterloo Station, S.E. 1.*

4578 1920. Oct. TALENT, John William, M.D., M.R.C.S., D.P.H., (*M.O.H. & S.M.O.*), *Town Hall Chambers, Ashton-under-Lyne, Lancs.*

4597 1920. Oct. †‡TAYLOR, James, *Architect and Surveyor, 23, King Street, Hereford.*

4590 1920. Oct. §THAKKAR, Prabh Dyal, B.A.(PUNJAB), *Sanitary Inspector, Municipal Committee, Quetta, India.*

4579 1920. Oct. THOMSON, Charles S., M.D., CH.B., D.P.H., (*M.O.H. & S.M.O.*), *Public Health Dept., Town Hall, Hyde, Ches.*

4591 1920. Oct. *vw*WALTERS, Miss Mary Catherine Dando, *16a, Park Road, W. Dulwich, S.E. 21.*

4580 1920. Oct. WICKENDEN, Arthur Fred, A.M.INST.C.E., A.R.I.B.A., P.A.S.I., *34, Overstrand Mansions, Battersea Park, S.W. 11.*

4581 1920. Oct. WILLIAMS, Percy Glyn Savours, M.D., B.S., M.R.C.S., L.R.C.P., *Principal Medical Officer of Health, Cairo Health Inspectorate, Cairo, Egypt.*

ASSOCIATES.

8320 1920. Oct. *v*ADAIR, Miss Florence Norah, *42, Moncrieff Street, Peckham, S.E. 15.*

8321 1920. Oct. ‡ADCOCK, Albert Oswald, *Marlingford, Norwich.*

8322 1920. Oct. ‡AGUTTER, Miss Margaret Elizabeth, *Islip, Thrapston, Northants.*

8323 1920. Oct. ‡BERESFORD, Arthur, *19, Victoria Road, Sherwood, Notts.*

8318 1920. Oct. BOXALL-CHAPMAN, Alfred Alexander, *18, Guild hall Street, Lincoln.*

8324 1920. Oct. ‡BRAMAH, Lawrence Wilson, *Arthurville, Ferry Road, Edinburgh.*

8326 1920. Oct. ‡BROWN, Robert Frederick, *"Meadow Lea," Great Clacton, Essex.*

8319 1920. Oct. CALLEN, Vincent Cuthbert Gordon, *"Orchard Cottage," Kent Road, East Molesey, Surrey.*

8325 1920. Oct. ‡CARR, Henry Herbert, *64, Wedderburn Road, Barking, Essex.*

8326 1920. Oct. ‡CHALCRAFT, William, *Compton, Guildford, Surrey.*

8327 1920. Oct. ‡CRANDELL, William, *18, Kirkley Road, Merton Park, S.W. 19.*

8328 1920. Oct. ‡DALEY, Michael, *63, Mary Street, Cilfynydd, Pontypridd, Glam.*

8329 1920. Oct. ‡DART, Claude Symonds, *"Hilmond," Charles Street, St. Helier, Jersey, C.I.*

8330 1920. Oct. ‡DAWSON, Charles Joseph, *18, Loxham Street, Great Lever, Bolton, Lancs.*

8331 1920. Oct. *v*DONALD-MORRISON, Mrs. Margaret Bryce, *Calanda Club, 35, St. George's Square, S.W. 1.*

8332 1920. Oct. ‡ELLIOTT, Bernard Goward, *95, Northampton Road, Market Harborough, Leicester.*

8333 1920. Oct. ‡FELL, Albert, *104, Chatham Street, Edgeley, Stockport, Ches.*

8334 1920. Oct. ‡FERGUSON, Donald, *113, Broughton Street, Edinburgh.*

8335 1920. Oct. *v*FIELDING, Miss Thora, *St. Brelades, Canterbury, Kent.*

8336 1920. Oct. *v*FITZMAYER, Miss Charlotte Sophia Howard, *3, Kennington Terrace, S.E. 11.*

8337 1920. Oct. *v*FLANAGAN, Miss Mary Patricia, *The Grove Fever Hospital, Tooting, S.W. 17.*

8379 1920. Oct. ‡GIBBONS, James Thomas, *64, Lichfield Road, Bow, E. 3.*

8338 1920. Oct. ‡GRAY, Cyril, *37, Phillips Road, Newmarket, W. Suffolk.*

8339 1920. Oct. ‡GREEN, Herbert John, *18, Norlington Road, Leytonstone, Essex.*

8340 1920. Oct. ‡GREENFIELD, Charles Edward, *174, Edward Street, Brighton.*

8341 1920. Oct. ‡HAMMOND, George Herbert, *Public Health Department, Leamington Spa.*

8342 1920. Oct. ‡HAYWARD, Alfred Ernest, *30, Derry Avenue, Plymouth.*

8343 1920. Oct. ‡HILL, James, *51, Brunswick Street, Edinburgh.*

8344 1920. Oct. ‡HORN, Peter Phillip, *55, St. Leonard's Hill, Edinburgh.*

8345 1920. Oct. ‡HUGHES, William Moulton, *40, Davies Road, West Bridgford, Notts.*

8346 1920. Oct. *v*IMRIE, Miss Leonora, *56, Lauderdale Mansions, W. 9.*

8347 1920. Oct. ‡JAMES, Thomas Reginald, *6, Rutger Place, Stoke Devonport.*

8348 1920. Oct. ‡KEMP, Frederick William, *60, Erskine Road, Walthamstow, E. 17.*

8349 1920. Oct. ‡LEACH, John Edward Clement, *12, Church Street, Market Drayton, Salop.*

8350 1920. Oct. *v*McALPINE, Miss Janie S., *41, St. Andrew's Square, Edinburgh.*

8351 1920. Oct. ‡McGILL, Robert Alexandra, *58, Woodstock Road, Upper Walthamstow, E. 17.*

8352 1920. Oct. ‡MIDWINTER, Walter, *2, Argyle Road, Swanage, Dorset.*

8353 1920. Oct. ‡MONTGOMERY, Miss Hilda Mary, *"Mayfield," Castle Street, Ongar, Essex.*

8354 1920. Oct. ‡NICHOLAS, Miss Kathleen Mary, *4, Bellevue Crescent, Sunderland.*

8355 1920. Oct. ‡NICKLIN, Arthur Nelson, *928, Ashton New Road, Clayton, Manchester.*

8356 1920. Oct. ‡PATTERSON, John William, *Health Inspector, Council Chambers, Corowa, New South Wales*

8357 1920. Oct. *s*PEAKMAN, Miss Ada Violet, *123, College Road, Moseley, Birmingham.*

8358 1920. Oct. ‡PLIM, John, *8, Crown Street, Silverdale, Staffordshire.*

8359 1920. Oct. ‡POWER, John, *153, Higher Hillgate, Stockport, Ches.*

8360 1920. Oct. ‡ROBJANT, Bertram Harold, *84, Amwell Street, Hoddesdon, Herts.*

8361 1920. Oct. ‡ROE, George Henry, *34, Suffrage Street, Smethwick.*

8362 1920. Oct. ‡RUTHERFORD, William, *34, High Street, Coldstream, Berwickshire.*

8363 1920. Oct. ‡SADGROVE, Edgar Thomas Reeve, *50, Mornington Road, Wanstead, Essex.*

8364 1920. Oct. *v*SIME, Miss Effie Fleming, *Bellevue, Largo, Fifeshire.*

8365 1920. Oct. *v*SKENE, Miss Lily, *32, Moore Street, Chelsea, S.W. 3.*

8366 1920. Oct. ‡SMITH, Albert Harry, *54, Station Road, Hendon, N.W. 4.*

8367 1920. Oct. *v*SMITH, Miss Elsie Lomas, *35, Moorland Avenue, Hyde Park, Leeds.*

8368 1920. Oct. ‡SMITH, Miss Gertrude, *31, Ash Avenue, Cadishead, Lancs.*

8369 1920. Oct. ‡TEASDALE, William, *Bowesfield Lane, Stockton-on-Tees.*

8370 1920. Oct. *v*THOMSON, Miss Jamesina, *28, Lismore Road, Croydon.*

8371 1920. Oct. ‡TITHERIDGE, Percy James, *8, Castle Street, Guildford.*

8372 1920. Oct. ‡TRIPP, William Charles, *7, North Street, Calne, Wilts.*

8373 1920. Oct. ‡VIGAR, Albert Luther, *2, West Hill Place, Brighton.*

8374 1920. Oct. ‡WADSWORTH, Harry, *Sanitary Inspector, The Hill, Mossel Bay, Cape Province, South Africa.*

8375 1920. Oct. ‡WALKER, George, *8, Quadrant, North Berwick, Scotland.*

8376 1920. Oct. ‡WISHART, John, *15, McLaren Terrace, Carron, Falkirk.*

8377 1920. Oct. ‡ZANAZZI, John Richard, *18, West Claremont Street, Stockbridge, Edinburgh.*

ELECTED NOVEMBER, 1920.

MEMBERS.

4599 1920. Nov. ANDERSON, Rev. William Jenkins Webb M.D., CH.B., D.T.M., *Wesleyan Minister and Medical Missionary, c/o W.M.M.S., 24, Bishopsgate, E.C. 2.*

4600 1920. Nov. EVANS, John Edgar Vaughan, P.A.S.I., *30, Cambridge Terrace, Hyde Park, W. 2.*

4611 1913. Jan. ‡*GRAY, Frederick R., *Health Department, Trinity Road, Sheerness.*

4608 1920. Nov. ‡*HINDS, Harry Kenneth, *The Courts, Carlisle, Cumberland.*

4610 1920. Nov. §KATGARA, Merwan P. H., L.C.E., *c/o Messrs Taraporvala & Bharoocha, Petit Building, 7-10, Elphinstone Circle, Fort, Bombay, India.*

4601 1920. Nov. ‡KINGSTON, Walter George Frederick, *Chief Sanitary Inspector, Godstone R.D.C., The Green, Godstone, Surrey.*

4609 1920. Nov. *LARKE, Miss Helen Maude, *22, Deauville Court, Clapham Park, S.W. 4.*

4602 1920. Nov. LUNDBERG, Dr. Charles Johan Fredrik, *Chief Medical Officer, Jönköping, Sweden.*

4603 1920. Nov. MITAL, Ishwara Chandra, B.SC.(GLASG.), *Assistant Engineer, Sub-Divisional Officer, Irrigation Division, Jammu and Kashmir State, India.*

4604 1920. Nov. PEARCE, Major John Wesley, O.B.E., R.E.(Retd.), *1, Pemberton Villas, Netley Street, South Farnboro', Hants.*

4605 1920. Nov. ROBERTS, Evan Wendell, A.R.I.B.A., *Station Road, Radcliffe-on-Trent, Notts.*

4606 1920. Nov. ‡WHITE, William Lamb, *Sanitary Domestic Engineer, 72, Sampson Road, Sparkbrook, Birmingham.*

4607 1920. Nov. WILKINSON, Lionel St. George (Capt.), M.C., M.SC., A.M.INST.C.E., *Borough Engineer & Surveyor, Municipal Buildings, Crewe.*

4612 1920. Nov. *WOOD, Robert, *Benson, Edgar Road, Sanderstead.*

ASSOCIATES.

8380 1920. Nov. BRADLEY, Miss Bessie Margaret, *128, St. Cross Road, Winchester.* (*Cert. S.I.E.B.*)

8381 1920. Nov. *s*CLARKE, Miss Muriel Bennett, "*The Limes,*" *Cannock, Staffs.*

8382 1920. Nov. ‡CRONK, John Wilfred, *5, Florence Terrace, Ealing Common, W. 5.*

8383 1920. Nov. ‡CUMMING, Edward John, "*Sunnyside,*" *Castle Hill Terrace, Maidenhead.*

8103 1913. July ‡DEAN, Arnold, *Shire Secretary, Shire Hall, Maldon, Victoria, Australia.*

8384 1920. Nov. ‡FISHER, Philip John, *32 & 34, Angela Street, Mill Hill, Blackburn.*

8385 1920. Nov. *s*FLINT, Miss Beatrice, *142, St. Saviour's Road East, Leicester.*

8386 1920. Nov. ‡HAMILTON, Alfred Winstanley, *31, Talbot Road, Withington, Manchester.*

8387 1920. Nov. ‡HOBLYN, Harry, *14, Bean Road, Dudley.*

8388 1920. Nov. ‡HOCKEN, Edmund Beckinton, *Destructor, West Dock Street, Hull.*

8389 1920. Nov. ‡JONES, Miss Elizabeth, *Church View, Hawarden, near Chester.*

8390 1920. Nov. ‡PENNINGTON, Miss Jessie Elizabeth, *Victoria Square, Worksop, Notts.*

8391 1920. Nov. ‡SHARPE, Emsley, *6, The Green, Lidget Hill, Pudsey, Yorks.*

8392 1920. Nov. ‡SHIMELD, Harold, *19, Vainor Road, Wadsley, Sheffield.*

8393 1920. Nov. ‡SMITH, Percy Philip, *30, Caledon Road, Sherwood, Notts.*

8394 1920. Nov. ‡THOMAS, John, *Gwynle House, County Road, Pen-y-groes, Carnarvon.*

8395 1920. Nov. ‡THOMPSON, George Alfred, *1, Victoria Place, Skilbeck Street, Leeds.*

8396 1920. Nov. ‡TROTTER, Harry Winter Theodore, *Sanitary Inspector, Aylsham, Norfolk.*

8397 1920. Nov. ‡TURNBULL, Nathaniel William John, *Sanitary Dept., Kaduna, Northern Nigeria, Africa.*

8398 1920. Nov. ‡WADE, Alfred, *185, Brookhill, Sheffield.*

8399 1920. Nov. ‡WALTON, Herbert James, *47, London Road, Ipswich.*

8100 1920. Nov. ‡WEBSTER, Jack Roland, *71, Montague Road, Cambridge.*

8101 1920. Nov. ‡*m*WILLOUGHBY, Frederick, *10, Small Street, Germiston, Transvaal, South Africa.*

8102 1920. Nov. ‡WROE, William, *30, Beckenham Road, Cheetham Hill, Manchester.*

ELECTED DECEMBER, 1920.

FELLOWS.

4020 1906. AMYOT, John A., C.M.G., M.D., C.M., *Deputy*
F. 1920. Dec. *Minister of Public Health, Daly Building, Ottawa, Ontario, Canada.*

2721 1909. FRANCK, James Ernest, F.R.I.B.A., *1, New*
F. 1920. Dec. *Court, Lincoln's Inn, W.C. 2.*

4523 1920. HUMPHREYS, George William, C.B.E., M.INST.
F. 1920. Dec. C.E., *Chief Engineer, London County Council, County Hall, Spring Gardens, S.W. 1.*

1701 1903. MARTIN, John Middleton, B.A., M.D., D.P.H.,
F. 1920. Dec. *The Tower House, Pittville Circus, Cheltenham.*

1537 1907. PRESCOTT, Albert Ernest (Lt.-Col.), D.S.O.,
F. 1920. Dec. *County Surveyor, Shire Hall, Hertford.*

4553 1920. RILEY, William Edward, R.B.A., F.R.I.B.A.,
F. 1920. Dec. M.INST.C.E., *6, Raymond Buildings, Gray's Inn, W.C. 1.*

1121 1897. SANDERS, Charles, M.B., M.R.C.S. (*M.O.H.*), *3,*
F. 1920. Dec. *Norwich Road, Forest Gate, E. 7.*

3134 1912. TEMPLE, Frederick Charles, M.INST.C.E., *Jam-*
F. 1920. Dec. *shedpur, Singhbhum, India.*

3835 1915. WILLIAMS, George Bransby, M.INST.C.E., M.I.
F. 1920. Dec. MECH.E., *Sanitary Engineer to the Government of Bengal, Calcutta, India.*

1554 1902. WYLIE, Adam Storer, F.I.C., *Main Drainage*
F. 1920. Dec. *Department, Ministry of Public Works, Cairo, Egypt.*

MEMBERS.

4613 1920. Dec. ABBOTT, Capt. Thomas William, R.E., *c/o Messrs. Cox & Co., Bombay, India.*

4614 1920. Dec. ASHAN, Keshevan Palpu, M.A.(EDIN.), B.SC. (EDIN.), *Tiruchengod, Salem District, South India.*

4615 1920. Dec. BLIZARD, William Ewart, B.SC., A.M.INST.C.E., *Roman House, Bemerton, Salisbury.*

4634 1920. Dec. ‡*BOLLARD, Edward Gomer, *43, Saughall Road, Chester.*

4616 1920. Dec. ‡*m*BOOTH, James Causland, *39, Reitz Street, Kroonstad, O.F.S., S. Africa.*

4617 1920. Dec. BRODIE, Miss Mabel Garland, M.B., CH.B., D.P.H., *Welfare Medical Officer, Durham C.C., 42, Old Elvet, Durham.*

8 1920. Dec. CALDWELL, John Revie, M.B., CH.B., *Tuberculosis Medical Officer, Durham C.C., Lyndhurst, The Avenue, Durham.*

4619 1920. Dec. COOPER, Bertie, P.A.S.I., M.INST.M. & C.E., *Borough Surveyor, Town Hall, Paddington, W. 2.*

4620 1920. Dec. HALL, Edwin Stanley, M.A., F.R.I.B.A., *54, Bedford Square, W.C. 1.*

4621 1920. Dec. HOSAIN, Dildar, B.E.(BOMB.), *Assistant Engineer, H.E.H. The Nizam's P.W.D., Jalna, India.*

4622 1920. Dec. HUSSAIN, Syed Ahmed, L.C.E.(BOMB.), *Sanitary Engineer, Erangera, Mysore, South India.*

4623 1920. Dec. ‡*m*JESSOP, Capt. Harry, R.A.M.C.(T.), *Sanitary Inspector, 178, Horton Grange Road, Bradford.*

4635 1920. Dec. KELLETT, Miss Florence, *139, Victoria Road, Headingley, Leeds.*

4624 1920. Dec. LAWSON, Horace Morley, M.INST.M. & C.E., *Borough Engineer and Surveyor, Town Hall, New Cross Road, S.E. 14.*

4625 1920. Dec. MCAVOY, Samuel J., M.R.I.A.I., *Architect and Surveyor, 61, Castle Street, Belfast.*

4626 1920. Dec. MILLIGAN, Henry Joseph, M.C., M.D., CH.B., D.P.H., (*M.O.H.*), *Public Health Dept., Town Hall, Reading.* (*Nominated by the Town Council to represent the Authority.*)

4627 1920. Dec. MORISON, Major John, I.M.S., M.B., CH.B., D.P.H., *c/o Messrs. Grindlay & Co., 54, Parliament Street, S.W. 1.*

4636 1920. Dec. *MOSS, Arthur, *72, Louisa Street, Hr. Openshaw, Manchester.*

4637 1920. Dec. §MULLA, Hassan Mahomed Ibrahim, *Water Inspector, Bombay Municipality, Sanbli Street, "E" Ward, P.O.8, Bombay, India.*

4628 1920. Dec. PARSELLE, Major John, R.E., *Messrs. H. S. King & Co., 9, Pall Mall, S.W. 1.*

4642 1920. Dec. *PASSMORE, Walter A., *B, Chapel Mansions, Chapel Road, Ladbroke Grove, W.*

4633 1920. Dec. ‡*RIDLEY, Harold, *"The Bungalow," Scarborough Bridge, York.*

4639 1920. Dec. *RODWELL, Fred, *Bent Cottage, Bell Lane, Bury.*

4629 1920. Dec. RUTHEN, Sir Charles Tamlin, F.R.I.B.A., F.S.ARCH., *44, Bedford Row, W.C. 1.*

4630 1920. Dec. ‡SCOTT, Walter, *22, Victoria Parade, Kew Gardens, S.W.*

4631 1920. Dec. STEWART, John Anderson, A.M.INST.C.E., *c/o The Calcutta Improvement Trust, 5, Clive Street, Calcutta, India.*

4640 1920. Dec. ‡*TOMMIS, Harry, *5, Thorne Road, Thornton Lodge, Huddersfield.*

4641 1912. Nov. *Trusler, Lieut. Charles Henry, *24, Grand Parade, Flat No. 3, Brighton.*

4632 1920. Dec. Ward, Lionel Eric, p.a.s.i., *21, Surrey Street, Strand, W.C. 2.*

4633 1920. Dec. Williams, Lt.Col. Charles Edward, i.m.s., m.a., m.d., d.p.h., d.t.m., *Sanitary Commissioner, Rangoon, Burma, India.*

ASSOCIATES.

8107 1920. Dec. ‡Aldred, Louis Charles Christian, *Box 15 Barkpan, Transvaal, S. Africa.*

8108 1920. Dec. ‡Ames, John, *22, Westbourne Grove, Cheetham Hill, Manchester.*

8109 1920. Dec. *v*Anstis, Miss Edith Jane, *5, Perseverance Place, South Darenth, Kent.*

8110 1920. Dec. ‡*m*Bastow, John William, *2, High Fold, Exley, Head, Keighley, Yorks.*

8111 1920. Dec. ‡Bell, Miss Helen, *280, Wallgate, Wigan, Lancashire.*

8112 1920. Dec. *v*Belyea, Miss Amy Beatrice, *14, Winmarleigh Gardens, Leigh, Lancs.*

8113 1920. Dec. *v*Boyd, Miss Emily Sarah, *51, Claypath, Durham.*

8114 1920. Dec. ‡Boyes, William Arthur, *114, East Parade, Heworth, York.*

8115 1920. Dec. ‡Brady, Francis Bernard, *88, Queensland Street, Edge Hill, Liverpool.*

8116 1920. Dec. ‡Burnie, Miss Helen Mary, *10, Lucknow Avenue, Nottingham.*

8104 1920. Dec. Chapman, Arthur Edward, *Coopersale Common, Epping, Essex.*

8117 1920. Dec. ‡Collings, Edward, *116, Nelson Crescent, Napier, New Zealand.*

8118 1920. Dec. ‡Coxall, Miss Emily Eliza, *8, Bernard Street, Carrington, Nottingham.*

8119 1920. Dec. ‡Davies, Fred, *37, Doveleys Road, Pendleton, Lancs.*

8120 1920. Dec. *v*Dixon, Miss Rachel, *"Elmfield," Monkton, Jarrow-on-Tyne.*

8105 1920. Dec. Doraswamy, Marthi, *Sub-Assistant Surgeon, H.E.H. The Nizam's Dispensary, 750, Residency Road, Hyderabad, Deccan, India.*

8121 1920. Dec. ‡*m*Evans, Daniel Morgan, *3, Castle Street, Barry, Glam.*

8122 1920. Dec. ‡Evans, Thomas John, *2, Pentre Gardens, Grangetown, Cardiff.*

8123 1920. Dec. ‡Finlayson, John, *11, Huntly Place, Inverness, Scotland.*

8124 1920. Dec. ‡Gibson, Kenneth, *7, St. Cuthbert's Terrace, Gateshead-on-Tyne.*

8106 1920. Dec GUNNING, Samuel Thomas, *" Cranham," Luton Road, Harpenden, Hertford.*

8125 1920. Dec. ‡HILL, John, *49, Reynoldson Street, Newland Avenue, Hull.*

8126 1920. Dec. *s*LAING, Miss Agnes Ferguson, *The Domestic Science College, Harrogate.*

8127 1920. Dec. ‡LAVENDER, John Percy, *2, Grasmere Street, Gateshead, Durham.*

8128 1920. Dec. ‡LOVELESS, George Jerred, *190, Wimborne Road, Winton, Bournemouth.*

8129 1920. Dec. ‡MCGARVIE, Miss Elizabeth, *50, Gt. Cheetham Street West, Broughton, Manchester.*

8130 1920. Dec. *v*MCMINN, Miss Agnes Wood, *Park Cottage, Wishaw, Lanarkshire.*

8131 1920. Dec. ‡MALCOLM, David, *" Bellevue," East Linton, Prestonkirk, N.B.*

8132 1920. Dec. ‡O'KEEFFE, Martin, *40, Watsons Lane, Dundee, Scotland.*

8133 1920. Dec. *v*PAPPRILL, Miss Ethel Dora, *Holy Trinity Vicarage, Leicester.*

8134 1920. Dec. ‡READ, James Lionel, *20, Pugsley Street, Newport, Mon.*

8135 1920. Dec. ‡ROYAL, Albert Edward, *11, Belper Road, Wynberg, Cape, South Africa.*

8136 1920. Dec. ‡SCOTT, William Henry, *63, Denham Terrace, Wallsend-on-Tyne.*

8141 1895. July ‡SHEPHERD, Arthur James, *277, Clapham Road, S.W. 9.*

8137 1920. Dec. *v*SHEPHERD, Miss May, *40, Apsley Road, Bristol.*

8138 1920. Dec. ‡THOMPSON, Thomas Richard, *The Avenue, Norton, Malton, Yorks.*

8139 1920. Dec. ‡WARD, George, *188, Bradford Road, Manchester.*

8112 1920. Dec. ‡*m*WHITELEY, Cyril, *The Public Health Department, Council Offices, Whitefield, Lancs.*

8140 1920. Dec. *v*WILKINSON, Miss Jennie Leech, *The Union, Blackburn.*

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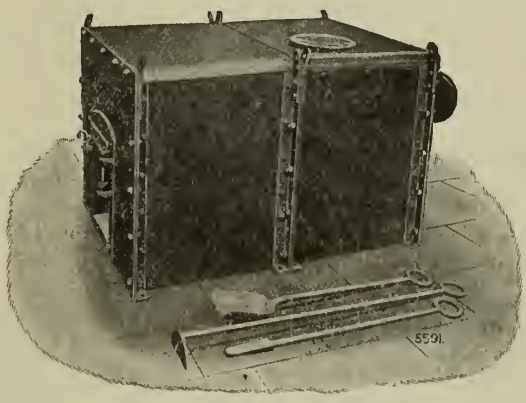

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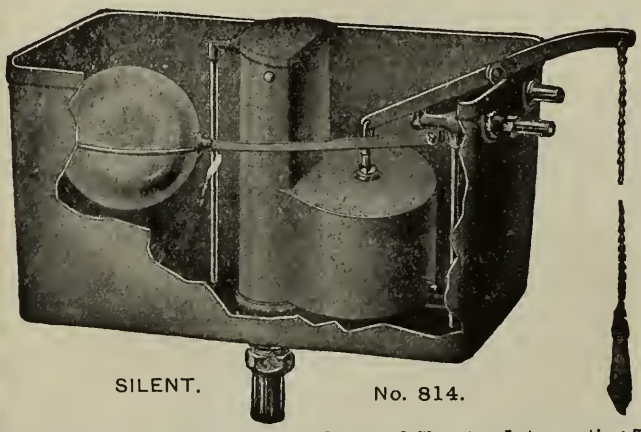

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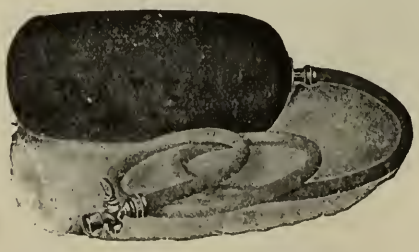

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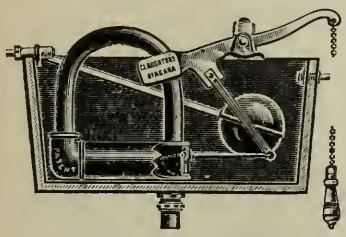

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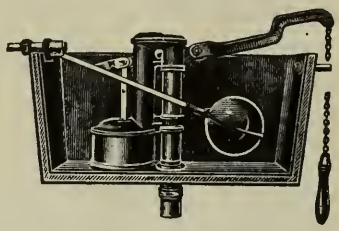

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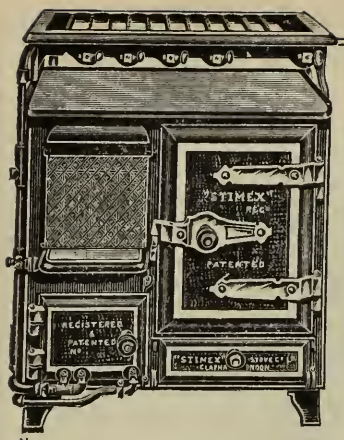

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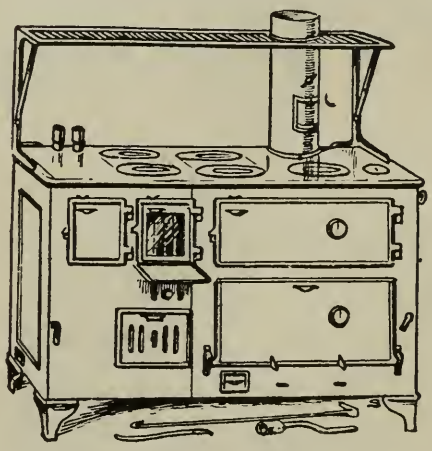

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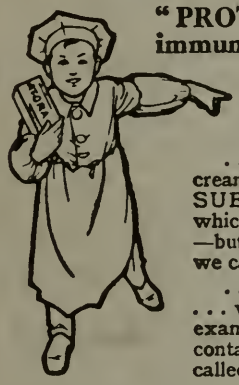

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